Strategic Group and Inter-firm Rivalry: An Empirical Study

by

Lui Wing-Wa
雷永華

Thesis presented to the Graduate School

in Partial Fulfillment of

the Requirements for the Degree of

MASTER OF PHILOSOPHY

Department of Management

Faculty of Business Administration

The Chinese University of Hong Kong

June 1997

(Prof. Shigefumi Makino)
Advisor

ABSTRACT

The term "strategic groups" was first introduced by Hunt (1972) in his doctoral dissertation. Since then, there have been numerous theoretical developments and practical applications of the concept. Nevertheless, some critics argue that the concept of strategic groups was merely a statistical artifact, not a theoretically developed construct. Thus, strategic group was defined as a categorization rather than a theoretical construct in previous studies. Partly for this reason, the existing strategic group research provides inadequate prediction and explanation with regards to firms' competitive behaviors and their performance consequences. The present study applied the proposition of the two theory-based constructs - market commonality and resource similarity - developed by Chen (1996) to examine formation and performance of strategic groups in Japanese automobile industry. Overall, the findings were consistent with the concepts of competitive asymmetry and mutual forbearance developed in recent inter-firm rivalry research. The results of statistical analyses indicated that both of the two constructs had a significant impact on firms' performance. In addition, the study revealed that there was an interaction effect between market commonality and resource similarity in their impact on performance. The implications of this study and direction for future research were also discussed.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

Figures

LIST OF TABLES

Tables

ACKNOWLEDGEMENT

Prima facie, I give my thanks to the Supreme Goodness who granted human spirit and intelligence. Thank Him for his gracious guidance throughout this intellectual experience.

My deepest thanks go to Professor Shigefumi Makino, my thesis supervisor, for his patience and kindness to guide a layman in research. He is an intelligent and knowledgeable scholar, he always provide valuable advice that makes me move toward wisdom, and I learned a lot from him during the research process.

I also want to thank Professor Chen Ming-Jer and Professor Robert Hoskinsson for their insights during their visit to The Chinese University of Hong Kong. Especially Professor Chen shared his experience in the development of the two constructs (market commonality and resource similarity) with us. It was a valuable experience to me.

I also take this chance to send my best regards to the colleagues in the Department of Management. I felt encouraged whenever I discussed my thesis topic with my colleagues during the research process. I would like to thank Professor Lau Chung-Ming and Professor Irene Chow for their valuable advice.

All in all, it is a precious learning experience. Thank all of you! Any fault in this paper should be the responsibility of the writer.

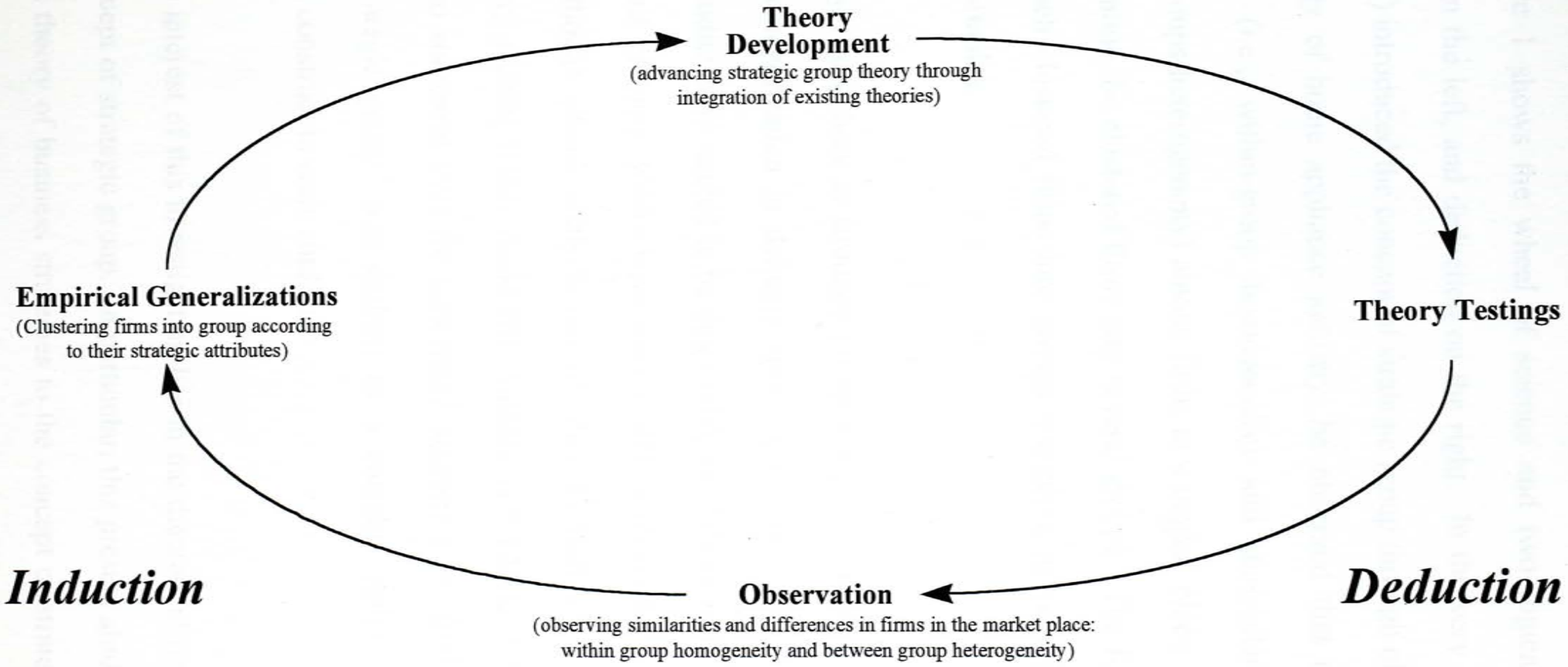
Lui Wing Wa
June 1997

CHAPTER I

INTRODUCTION

The term "strategic groups" was first introduced by Hunt (1972) in his doctoral dissertation. Since then, there have been numerous theoretical developments and practical applications of the concept (e.g., Caves and Porter, 1977; Cool and Schendel, 1987; Dess and Davies, 1985; Frazier and Howell, 1983; Harrigan, 1985; Hatten and Schendel, 1977; McGee and Thomas, 1986; Newman, 1978; Oster, 1982; Porter, 1979; Thomas and Venkatraman, 1988). Nevertheless, some critics argue that strategic groups were merely a statistical artifact, not a theoretically developed construct (Barney and Hoskisson, 1990; Hatten and Hatten, 1987). The main reason for this criticism is that previous studies have adopted different ways to operationalize the concept, focusing on different forms of groupings, and hence, provided inconsistent theoretical implications of the concept. While this present study is not going to debate this criticism in detail, it hopes to investigate the advancement in the study of strategic group, both conceptually and methodologically, and explore a comprehensive theoretical framework of the concept of strategic group. The following diagram (Figure 1) depicts the summary of the development of strategic group study and the basic position of this present study.

FIGURE 1
The Wheel of Science in relation to strategic group theory



The Wheel of Science is adapted from Walter Wallace. *The Logic of Science in Sociology* (Chicago: Aldine-Atherton, 1971).

Figure 1 shows the wheel of science and two logical systems: induction on the left, and deduction on the right. In the very beginning, Hunt (1972) introduced the concept of strategic group through observation. In his study of home appliance industry, he observed that there were similarities (i.e., within-group homogeneity) and dissimilarities (i.e., between-groups heterogeneity) among firms in a market place. Based on this observation, he clustered firms into several groups. The followers of this approach clustered firms into groups according to various different strategic variables.

Early researchers in strategic group study have tended to rely on statistical categorization in defining strategic groups. For this reason, previous studies have tended to be descriptive and lacked solid theoretical basis. Most previous works have used cluster analysis for categorizing firms. Although cluster analysis can be used for both exploratory and confirmatory studies (Hair, Anderson, Tatham and Black, 1995:425), it provides no statistical tests for conceptual inferences of strategic group. Thus, "strategic group" was defined as a category rather than as a theoretical construct in early studies.

The interest of this investigation lies in the theoretical development of the concept of strategic group. In particular, this present study attempts to relate a theory of business strategies to the concept of strategic group.

Specifically, we examine the two constructs - market commonality and resource similarity proposed by Chen (1996) in relation to strategic group. To this end, we study how formation of strategic group would influence, or be influenced by, the extent of rivalry in a given industry. We have the following research questions in the present study: 1) what factor(s) drives the formation of strategic groups in a given industry; 2) how strategic group influences inter-firm rivalry and competitive behavior within an industry; and 3) what will the performance consequences of the inter-firm rivalry and competitive behavior be among strategic groups.

The basic position of this present study can be illustrated by the top-right part of Figure 1. Previous strategic group literature was mostly inductive in nature, using cluster analysis to categorize firms into groups. In our study, we argue that the driving force for formation of strategic group is competitive intensity between firms, which, as Chen (1996) proposed, can be predicted through a detailed analysis of the two dimensions of competing firms: market commonality and resource similarity. We attempt to advance strategic group research by integrating prior strategic management theories in general, and inter-firm rivalry studies in particular. By doing so, it is hoped to provide new insights to the explanation and prediction of formation of strategic group, inter-firm rivalry between group members and performance consequences of these firms.

The present study seeks to contribute to adding new knowledge in that, first, it is a pioneer attempt to examine Chen's proposition of the two constructs (market commonality and resource similarity). Chen (1996) proposed the two constructs but so far no empirical work which examined the two constructs has been found. This study is one of the first batch to investigate inter-firm rivalry empirically using his proposition. In addition, the emphasis of Chen's (1996) work was on the development of the two constructs. The present study examines the impact of the two constructs on a firm's performance.

Second, the present study links the conceptualization of Chen to strategic group theory so as to refine the concept of strategic group. The concept of strategic group emerged in Industrial Organization (I/O) and exemplified by Porter's (1980) work. Based on the insights gained from recent inter-firm rivalry studies (e.g., Baum and Korn, 1996; Gimeno and Woo, 1996), this study aims at refining the concept of strategic group using theory-driven and firm specific approach.

Finally, the present study provides a thorough up-to-date literature review of the concept of strategic group, which highlights the different stages of development as well as main streams of thoughts of the theoretical development of the concept. In the following chapter, let us

first look at the major existing works on strategic group.

CHAPTER II

LITERATURE REVIEW

"Strategic group" is a concept which defines the collective behavior of firms in an industry. Up to now, there is no formal or universally accepted definition of this concept. Nonetheless, many researchers follow Porter's (1980:129) definition:

> "A strategic group is the group of firms in an industry following the same or a similar strategy along the strategic dimensions."

Following Porter's definition, strategic group can be treated as clusters of firms in "strategic space" in which group membership defines the essential characteristics of a firm's strategy (Reger and Huff, 1993:103).

In the present study, it is logical for us to conceive the formation of strategic group is driven by competitive intensity. The higher the competitive intensity between firms, the more frequently for them to compete directly with each other, thus, the higher the chance for them to fall into the same strategic group.

Strategic group study contributes to the understanding of strategy

formulation because it helps to identify the competitive structure of an industry and its rivalries among competitors. Porter (1980) suggested that firms in the same strategic group would be closer competitors than those firms in different strategic groups. Thus, knowing strategic group membership (competitors) helps strategy planners to understand the basis of competition within an industry and to improve the effectiveness of their competitive strategy.

Why Strategic Group Formed?

The fundamentals of the theory of strategic groups emerged in the traditional paradigm in industrial organization economics. The theory argues that firms' performance is determined by market conduct of the firms which is in turn influenced by market structure. The fundamental assumption of S-C-P paradigm, as Porter (1979) suggested, is that :

> "[F]irms in an industry are assumed to be alike in all economically important dimensions except for their size."

The crucial assumption is that firms' objective is profit maximization, and firms share the constraints of market structure will tend to behave in the similar manner.

From the point of view strategic management, the formation of

strategic groups within an industry provides implications for strategy formulation because the competitive pattern and characteristics of strategy would be differed between the groups. In this sense, strategic group analysis helps to formulate more effective strategy once the nature of competition in an industry is revealed.

However, the assumption that each firm's behavior (strategy) in a given industry is similar has a logical deficiency as it cannot explain why some firms are more successful than others under the same market structure. This is because firm-behavior elements, that is the impact of strategic choice on firms' performance, were ignored in the S-C-P paradigm. The more recent I/O theorists (i.e., strategic management researchers) attempt to integrate firm performance with its conduct as well as the market structure. The main argument for this approach is that a firm's strategic choice has an impact on the firm's performance, which brings the I/O theory and strategic management disciplines closer to each other (Porter, 1981).

On this basis, the recent studies suggest that a necessary condition for the formation of strategic groups within a given industry is the existence of intra-industry firm heterogeneity (Barney and Hoskisson, 1990; Fiegenbaum, McGee and Thomas, 1987). Economics and organization theories suggest that firms behave differently in the following

aspects: 1. goals (e.g., profit maximizing, revenue maximizing, growth maximizing or management utility maximizing); 2. strategies to achieve their goals; 3. assumptions about the future potential of the industry; 4. skills and resources and 5. reactions to the changes in industry environment. These aspects constitute intra-industry from heterogeneity, and hence, cluster firms into groups in a given industry.

Formation of strategic group is influenced by changes in strategic orientations of the firms. From time to time, firms change their strategies in order to explore new opportunities. These changes are responses to actions made by competitors in the same industry (Huff, 1982) and sometimes to the actions made by competitors from other industries (Fiegenbaum and Thomas, 1990). The choice of strategy follows a strategic change, enabling the firm to move to a better strategic position in the industry. If one firm is successful in improving its strategic position through strategic change, other competitors in the industry (or those in other industries) are likely to follow this change. This process carries on until the firms settle in a particular strategic position within the industry, and consequently, strategic groups are formed by firms with similar strategic orientations. Thus, patterns in formation of strategic groups may change over time as the strategy of firms changes over time.

From a different aspect, recent studies have suggested that firms'

performance are driven primarily by the resources and capabilities which the firms possess, not by the market structure, or competitive positioning, as suggested by the traditional I/O theory (Barney, 1986; Wernerfelt, 1984). This perspective, referred to as the resource-based view of the firm, suggests that similarities and differences between firms should be defined in terms of their resources, not in terms of market positioning. In addition, some other studies focused on cognitive structure of managers among the firms within the industry (e.g., Reger and Huff, 1993; Reger and Palmer, 1996), and argued that strategic group formation is driven by the perception of industry participants. Moreover, Wijnberg (1995) proposed using technological position in defining strategic group membership. While the I/O perspective is still dominant in the strategic group study, the theoretical foundation of study has become fairly dispersed. The subsequent sections overview some of the key conceptual perspectives on the study of strategic groups.

Strategic Group - Theoretical and Empirical

The studies of strategic groups are generally divided into several streams of thoughts : 1) Industrial Organization; 2) Dynamic Strategic Groups; 3) Cognitive Perspective; 4) Resource-Based Approach; and 5) Technological Paradigm. These streams differ in theoretical antecedent, primary focus of the study and level of analysis. Appendix 1 summarizes

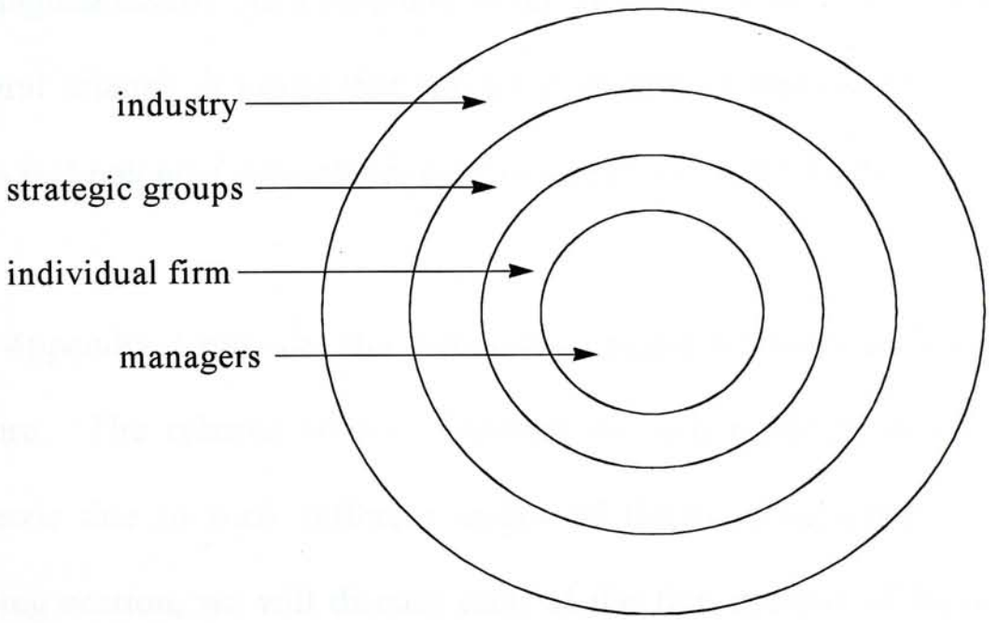
the differences in these five streams of thoughts. The concept of strategic group originally emerged in the industrial organization economics (I/O), exemplified by Porter's competitive strategies and five forces model. The earlier works of the I/O focused on the impact of various industry- and market-variables - on formation of strategic groups. The recent I/O based studies have put forward a time dimension to analysis, focusing on a dynamic interaction between strategic group and evolution of industry (i.e., the changing competitive environment over time). The cognitive perspective of strategic group has its theoretical bases in psychology including the classification theories (Johnson-Laird and Wason, 1977; Lakoff, 1987; Rosch, 1978) and the personal construct theory (Kelly, 1955; Fransella and Bannister, 1977). While the I/O perspective posits that strategic group formation is primarily driven by external environment forces, this perspective suggests that it reflects managers' cognitive structure. Resource-based approach argued that the nature of competition among strategic groups originates firms' resources, rather than product market combination served by the firms. Technological paradigm has its roots in the evolution theory in natural science which suggests that a group of companies that occupy technological positions near to each other may constitute a strategic group. The empirical studies on technological paradigm and resource-based approach are rarely found in the existing literature, whereas the other three streams of thought have empirical support.

Level of Analysis

At the broadest level, strategic group itself can be viewed as a primary unit of analysis (Huff, Huff and Thomas, 1994). In addition, there are four levels of analysis for strategic group research, namely, industries, groups of firms, individual firms, and managers (Pruett and Thomas, 1994). Figure 2 illustrates the four levels of strategic group research.

FIGURE 2

Level of Analysis



Each level of analysis is different from, yet complementary to, each other to explain strategic group formation. The I/O perspective focuses on

industry as a primary unit of analysis. This perspective examines patterns in competition within an industry and its impact on strategic group formation. The dynamic perspective also focuses on an industry as a primary unit of analysis, but a more emphasis is placed on an interplay between strategic groups in the process of industry evolution. The cognitive perspective primarily focuses on an individual manager level and attempts to explore the impact of managers' perception and cognition on strategic group formation. Resource-based approach emphasizes more on firm specific factors such as knowledge and capabilities of the firm. The technology perspective also focuses on an individual firm level. Similar to the resource-based approach, this perspective posits that a firm is an aggregation of proprietary technological assets. As a corollary to the principle of survival of the fittest in natural science, it posits that surviving groups of firms are those which possess technological advantages over other groups of the firms.

Appendix 2 provides the summary of major works in each stream of literature. The relative volume literature in each research stream is not symmetric due to their different stages of theory development. In the following section, we will discuss each of the five streams of literature in details.

Industrial Organization

The concept of strategic group first emerged in the field of industrial organization. The fundamental notion is that firms within an industry can be clustered according to market positioning (Porter, 1980). Another important concept in strategic group study, advocated by Cave and Porter, is mobility barriers. Mobility barriers are the intra-industry barriers which isolate groups of firms from others (Cave and Porter, 1977). In simplest language, the concept of mobility barriers, similar to that of entry barriers, refers to the extent of resistance that hinders a firm to move from one strategic group to another. This resistance may be constituted by general environment factors such as legal environment (e.g., patents in pharmaceutical industry), or firm specific factors (e.g., distinctive competencies, resources, or some other tangible or intangible corporate assets). The mobility barriers incur two types of costs: 1) absolute costs of movement from one group to another; and 2) operating or variable costs relative to those of the incumbents (McGee, Thomas and Pruett, 1995). For this reason, it is generally assumed that the higher the mobility barriers between groups, the more difficult for firms to move from one group to another, and hence, the more profitable are the within-group members. Porter (1980) noted that mobility barriers can change, just like entry barriers and mobility barriers can also be influenced by firm choices of strategy.

Originally, the term "strategic group" was first coined by Hunt

(1972) in his doctoral dissertation. According to Hunt, strategic group is defined as:

> "[A] group of firms within the industry that are highly symmetric...with respect to cost structure, degree of product differentiation, degree of vertical integration, and the degree of product diversification...formal organization, control system, and management rewards and punishment...".

In his study of the home appliance industry in US in the 1960s, he observed that firms in the industry shared the asymmetric organizational characteristics in terms of the extent of vertical integration and product diversification, and patterns in product differentiation. Based on these asymmetric characteristics, Hunt identified four strategic groups, each of which was termed: full-line national manufactures' brand producers, part-line national manufacturers' brand producers, private brand producers, and national retailers. Examining each group of the firms, Hunt suggested that the firms had an incentive to form a strategic group so that "it minimized economic asymmetry within each group" (Hunt, 1972:57).

Immediately after Hunt's work, Newman (1973) applied the similar conceptual model in his doctoral dissertation. He statistically examined 34 four-digit chemical products industries. Newman (1978) suggested that strategic group should be defined in terms of the extent to which firms are vertically integrated across industries. Firms pursuing the same lines of

business should be placed in the same strategic group, while those firms operating in the same industry but having their principal lines of business in a different industry should be considered to belong to a different strategic group.

Another attempt was made by Porter (1973) in his doctoral dissertation. He proposed the classification of strategic group by using the relative size of firms in the industry as a proxy for strategic group membership. Based on this proxy, firms were divided into two categories in each industry according to the scope of strategies. The two groups of firms were named a leader and a follower. Following Porter's work, some other studies also used firm size to identify strategic group membership (Caves and Pugel, 1980; Lahti, 1983). These studies grouped firms based on the measure of resources availability and product-market scope, and suggested that small firms were more profitable than large firms in some industries under study. Harrigan (1980), using strategic mapping approach similar to Porter's (1980), identified strategic groups in seven declining industries based on characteristics of industry concentration, potential differentiation of products and height of exit barriers.

Building upon these pioneers in strategic group research, recent researchers defined strategic group, focusing more explicitly on strategic dimensions of firms in an industry instead of observed within group

homogeneity. For example, some of these researchers used manufacturing, marketing and structural variables to classify firms (Hatten, 1974; Hatten and Schendel, 1977). Other researches defined strategic group using financial variables such as leverage, current ratio and return on assets (Baird and Sudharsan, 1983; Hatten, Schendel and Cooper, 1978; Ryans and Wittink, 1985); and size and investment behavior of firms (Primeaux, 1985). Marketing variables were used most frequently by many researchers to identify strategic groups. These variables include the scope and the extent of differentiation (Howell and Farizer, 1983); price, advertising, number of brands and relative market (Hatten and Hatten, 1985); advertising/sales, R & D/sales, assets/sales, business unit sales/parent sales and market shares (Hergert, 1983); target market, product, promotion, price, buying and display (Hawes and Crittenden, 1984); and advertising to sales ratio (Oster, 1982).

Ramsler (1982) took a more global view and studied the entry of non-U.S. based banks in the U.S. market, using the extent of product market differentiation, size, geographic scope as criteria to identify strategic group in the banking industry. He found that market entry strategies were similar for the same strategic grouping. In study of an investment banking industry, Hayes, Spence and Marks (1983) classified banks into strategic groups based on several industry specific strategic variables involving matching between characteristics of investment bank

and characteristics of individual customers. They found that there were a rich set of variables for identifying strategic groups which were contrary to the conventional industry wisdom.

Appendix 2 provides a summary of the review of these studies. From the summary, we can see that researchers had used different strategic attributes as the basis for clustering of firms. It seems that the divergence of the dimensions used by these researchers lead to the difficulty in comparing the results of these studies.

Dynamic Strategic Group

The dynamic perspective of strategic group evolved from the industrial organization economics (I/O). Based upon the I/O and strategic management theories, this perspective put forward the time dimension to the analysis of industries and focused on a dynamic interaction between strategic group and evolution of industry. Fiegenbaum, Sudharshan and Thomas (1987) argued that previous strategic group research generally ignored the influence of time on competition and have assumed homogeneity in strategic behavior over the time period researched. They studied the U.S. drug industry, focusing on the competition in the development of prescription-over-the-counter drugs. Their study showed that several strategic dimensions underlying strategic groups such as scope

(asset, sales, R & D etc.) and resource-deployment (finance, production and marketing, changed over time. In another study, Fiegenbaum and Thomas (1990) examined the insurance industry for the years of 1970-1984. The study found that the number of strategic groups within the industry had changed over the period researched because of their changes in strategic dimensions.

Mascarenhas (1989) had conducted a longitudinal study to explore strategic group dynamics over the periods of economic stability, growth and decline in an international offshore oil-drilling business. The findings of the study suggested that changes in formation of strategic groups were associated with substantial environmental growth and decline rather than economic stability. Mascarenhas and Aaker (1989a) proposed an analytical and empirical framework to examine strategic change over the business cycle in the oil-drilling industry.

Cool and Schendel (1988) used the longitudinal data of pharmaceutical industry in U.S. from 1963 to 1982 and found that risk-return relationships influenced the strategic investments of companies. They suggested that performance differences among members within the same strategic group would occur due to different process of asset accumulation. Cool and Schendel (1987, 1988) examined the strategy-performance consequences of strategic group membership over time.

The dynamic perspective can be viewed as an extension of I/O based strategic group theory which addressed the time factor in analysis strategic group. Because of shift in economic cycle, the strategy of firms changes and affects their strategic attributes. Thus, members of a given strategic group varies within the industry across different period of time. The studies reviewed above evidenced that in different time period or different business cycle, patterns in strategic group formation changed. On the other hand, though group members changed, strategic groups still formed within the industry. This may implied that strategic groups are a relatively stable, integral characteristic of industry structure, the issue is what is the driving force for the formation of these strategic groups.

Cognitive Perspective of Strategic Group

The cognitive perspective has its theoretical basis in cognitive psychology. This perspective suggests that formation of strategic groups in an industry reflects the cognitive structure of managers. The core argument underlying this perspective is that industry participants share similar perception about strategic commonalties among firms and cluster competitors according to this perception.

The work by Tang and Thomas (1992) applied the theories of

spatial competition and cognitive taxonomy to explain why strategic groups exist. The theory of spatial competition argues that firms may form a strategic group in order to minimize the extent of product differentiation, and the process of strategic group formation would be influenced by managers' mental categorization scheme. Reger and Huff (1993) confirmed the premise that strategic groups would be the result of perception and cognition of strategists. The findings of their study suggested that mental models of managers were similar among the groups of bank holding companies headquartered in the Chicago area.

Reger and Palmer (1996) studied managerial categorization of competitors, and empirically examined differences between the two modes - automatic and controlled processing by executives on their perception on competitors in a turbulence environment. The results suggested that cognitive inertia affected judgments in both modes, but the effect was stronger with automatic processing. The results of the longitudinal study indicated that environmental change creates diversity of thought across managers in the same environment. Managers in competing firms are therefore apt to view competition quite differently in turbulent environment.

Resource-Based Approach

Instead of the conventional paradigm of strategic groups studies, some of the recent studies argued that the bundles of resources, rather than product market combination, should be the basis of competitive analysis (Dierickx and Cool, 1994; Wenefelt, 1984). Mehra (1994) pointed out that strategic management has routinely imported theories from other disciplines such as I/O economics, marketing, financial theory, and organization theory. The integration of these theories with strategic management has led to the ambiguous definition of the strategic groups concept. Building on I/O economics and strategic management perspective, he proposed a resource-based model of strategic group, where competition is defined in terms of types of resources possessed by industry participants, not in terms of those of product market served by these participants.

The model is conceptualized to explain formation and performance of strategic groups, using a two-by-two matrix which describes the resource mix on the horizontal axis and the degree of competitive differentiation on the vertical axis. The degree of both resource mix and competitive differentiation defines types of strategic groups and predicts performance of strategic group members. Mehra's model is the first that explicitly addressed performance consequences of strategic group. Nevertheless, no empirical works have examined Mehra's conceptual model.

Technological Paradigm

Technological paradigm in strategic group studies derived the concept of evolution theory in natural science. This perspective has been applied to explain the nature of competition in specific industries. According to Wijnberg (1995) who proposed the technological paradigm, strategic groups should be defined in terms of product-space. Technological paradigm is conceptualized as the cluster of characteristics that represents the '"average" offering of the industry (i.e., product and services defined by product characteristics) at a certain point in time. He also introduced the concept of "product-space", defined as the dimensions and the number of product characteristics that consumers/users recognize as relevant to them. Wijnberg thought that the existing strategic group literature had the weakness as it had used many different criteria to define groups, which made comparison of the results of different studies difficult. He further argued that:

> "..... an appropriate definition of the strategic group concept should take the nature of competitive process into account. The industry can be defined as the group of enterprises who are in competition with each other [Boyer, 1984; Wijnberg, 1989]. 'Being in competition with' means that the actions of a competitor might possibly influence the performance [profits, market-share] of another competitor and that therefore a competitor will take the actions and decisions of competitors into account when planning his own actions." (Wijnberg, 1995:256)

In simplest language, technological paradigm in strategic group studies proposed that 1) a firm occupies one or more positions in product-space, and 2) a group of firms that occupy positions near to each other may constitute a strategic group. In addition, Wijnberg also addresses performance implications for strategic group formation. Nevertheless, his proposition has not been empirically examined.

Summary

We had reviewed different perspectives of strategic group studies. Each of them has its own contributions, assumptions and limitations. The I/O based perspective provided an understanding of industry structure as well as analytical tool, as Porter (1980:132) stated that:

> "[T]he strategic group is an analytical device designed to aid in structural analysis. It is an intermediate frame of reference between looking at the industry as a whole and considering each firm separately."

Having the understanding of the industry structure, i.e., how a firm attempts to compete in the industry (Porter, 1979), managers formulate more effective strategy. The grouping represents an assumption that firms in the industry attempt to compete in that manner. Thus, firms that are homogeneous in strategic attributes are implicitly assumed to be close competitors. Homogeneity in strategic attributes is the necessary condition

for formation of strategic group (Barney and Hoskisson, 1990), however, the grouping itself cannot explain the extent of competition, rivalry behavior and performance for the firms in concern.

The fundamental rationales of the Dynamic perspective is very much close to those of the I/O. The Dynamic perspective can be viewed as an extension of the I/O based approach. In the conventional I/O paradigm, industry structure is considered as static and deterministic (Porter, 1979). The Dynamic perspective seems to be compensation of the weaknesses of the static and deterministic in conventional I/O paradigm by longitudinal studies which analysis strategic groups in an evolutionary and historical framework. For example, the changes in strategic groups can be best demonstrated Markov approach (Tang, Thomas and Fiegenbaum, 1994). Underlying this approach is that "probability of moving from one state to another is not affected by the history of the process" (Tang et al., 1994:332).

Instead of looking at strategic group from the industry structure, the cognitive perspective attempts to view it from the perspective of industry participants. The managerial perception of similarity and differences among competitors influence strategic decision making. Reger and Huff (1993:103) thought that:

> "[D]ecision makers' perception and cognitions are phenomena that can be expected to influence industry evolution"

To a certain extent, this proposition is a challenge to the conventional strategic group concept in that the unit of analysis shifts from firms to individual managers. In addition, the phenomenon of strategic groups is a result of perception and cognition of decision makers, not a cluster of homogeneity of strategic attributes between firms in a given industry.

On the other hand, this perspective can also be viewed as a complement to the existing strategic group theory. The existing strategic group studies focus on the external factors of the firms, specifically the strategic postures of the firms in the market place. The cognitive perspective emphasizes the internal factors, i.e., the perception and cognitions of individual managers of individual firms in the industry. A combination of both internal and external factors provide a validation of each other, and provides a fertile field for theoretical integration in future research.

The resource-based approach shifts the primary unit of analysis for strategic group study from a market to a firm's resources. If resources represent firm's strategic attributes, then strategic groups should be defined by the resources. Cool, Dierickx and Martens (1994) argue that if

strategic groups are conceived as elements of industry structure, then they should be identified on the basis of structural or stable firm attributes, i.e. stocks. They suggest that strategic groups should be defined on the basis of strategically relevant attribute, i.e., resources. Recent studies (Barney, 1986; Dierickx and Cool, 1989; Wernerfelt, 1984) also argue that the bundles of resources, rather than product market combination, are crucial to competitive advantage. Moreover, the linkage between performance and strategic groups seems to be obvious in using resources as the basis for identifying strategic group membership. The proposition of resource-based definition of strategic groups provides a way for theoretical integration in defining strategic groups by both product market and resources.

The technological paradigm argues that strategic groups should be defined in terms of product space - a number of product characteristics recognized by consumer/users as relevant to them. To a certain extent, this is similar to product market argument discussed earlier and thus this perspective does not add too much value to the concept of strategic group.

To sum up, the concept of strategic group has its root in the I/O which focuses on market structure and concentration of an industry. The I/O perspective hypothesizes that market performance is determined by market structure. With this theoretical foundation, analysis of business

competition within an industry is made possible, and competitive analysis helps the formulation of strategy. Porter's (1980) work which identified the possible differences among firms' strategic options in a given industry, shaped the concept of strategic group. It made a path for the later researchers to identify strategic groups using different strategic dimensions, and thus the concept of strategic group emerges as a theory to explain the competitive pattern in a given industry. More recent researchers argued the formation of strategic groups from different perspectives. The I/O perspective assumes homogeneity in strategic behavior among firms and ignores the influence of time on changes in strategic group formation. The dynamic perspective adds new insights to strategic group study by incorporating time factor, that is, evolution of industry, whereas it pays less emphasis on firm-specific factors. The cognitive perspective, emerged from psychology, posits that the perceptions and cognitions of corporate decision makers would more critically influence the formation of strategic groups, than external factors. The resource-based approach argues that the bundles of resources are more important factors than product market combination in defining the nature of competition. The technological paradigm attributes the nature of competition to the average offering of product characteristics of the industry at a certain point of time. In this perspective, firms are grouped based on product characteristics instead of strategies. Unlike the traditional I/O perspectives, this perspective emphasizes the importance of

firm-specific factor, but lacks empirical support.

However, the five perspectives discussed above are not mutually exclusive. Rather, they are complementary to each other, and all shed light on different aspects of formation and performance of strategic groups. Despite the increased development of conceptual discussion of strategic groups, the existing empirical studies differ in operational definition of the concept and level of analysis. This makes the comparison of the results and findings of the past studies difficult.

CHAPTER III

THEORY AND HYPOTHESES

We reviewed major strategic group literature in the previous chapter. The utility of strategic group concept is to "characterize the strategies of all significant competitors along these [strategic] dimensions" (Porter, 1980:129). As far as competitor analysis is concerned, we made a comparison of major perspectives on competitor analysis which is summarized in Appendix 3.

The I/O paradigm assumes that firms in the same industry are *de facto* competitors (Barney, 1986; Porter, 1980). This assumption has been challenged by subsequent strategic group studies which suggested that it is strategy which clusters competitors, not market structure in a given industry. The literature review shows that previous strategic group studies tend to assume that firms in the same strategic group are close competitors because firms in each group are isolated from others by mobility barriers, and consequently, group members tend to be direct rivals. More recent strategic group studies have clustered firms into strategic groups based on a variety of strategic variables (e.g., Caves and Porter, 1977; Cool and Schendel, 1987; Dess and Davies, 1985; Frazier and Howell, 1983; Harrigan, 1985; Hatten and Schendel, 1977; Newman, 1978; Porter, 1979;

Oster, 1982). However, that firms share similarities in strategic attributes does not necessary imply that these firms are directly competing with each other. Each firm is unique in terms of market segments where it competes, the resources it possesses, and the risks it faces in each strategic investment.

Recent competitive dynamics and inter-firm rivalry studies revealed the findings contradicting to the conventional paradigms. The major thrust of competitive dynamics and inter-firm rivalry studies is that firms sharing similar strategic attributes may not be direct competitors because they may be different in their market focuses and resources. This is the case particularly when firms are competing with their rivals in multiple market. In this situation, in anticipating retaliations in other markets from competitors with similar sets of markets and resources, firms are less motivated to compete aggressively with their competitors in a specific market(s), and hence, the intensity of rivalry among these firms decreases. Thus, the closest competitors may not be the most intense rivals. For example, recent studies (Baum and Korn, 1996; Gimeno and Woo, 1996) provided empirical evidence that the extent of rivalry would be lowered when firms were involved in multimarket competition. The underlying idea is that the inter-firm rivalry should be examined by both market and resource attributes of the firms. Serving overlapping markets or possessing similar resources alone cannot sufficiently explain the extent of

rivalry among firms. This is because firms competing in the same market may possess different sets of resources, and hence, different strengths or weaknesses against their rivals. Similarly, firms possessing a similar resource set may not be direct competitors if they serve different markets. Table 1 summarizes the factors influencing the formation of strategic groups and their explanations. It seems that the existing explanations are inadequate because none of them captures key elements - product market attributes and firm-specific resources and capabilities - simultaneously.

TABLE 1

Existing Explanations for the Formation of Strategic Group

Factors	Existing Explanations
Industry Structure	I/O (Porter, 1978, 1980; Cave & Porter, 1972) Population ecology (Freeman & Hannan, 1984: naturally occurrence of SGs consistent with population ecology view of survival and dispersion of firms)
Firm-Specific Factors	Resource-based approach (Mehra, 1994) Technological paradigm (Wijnberg, 1995)
Managers Perception	Cognitive perspective (Reger & Huff, 1993)

Competitor Analysis and Inter-firm Rivalry

Chen (1996) attempted to bridge this conceptual gap. He conceptualized competitor analysis based on two theory-based constructs - market commonality and resource similarity. He suggested that the extent of rivalry can be predicted through a detailed analysis of the market and resource dimensions of firms in the industry. In other words, competitors

should be defined in terms of the firm's profile of markets served (market commonality) and resources possessed (resource similarity). ***Market Commonality*** is defined as the degree of presence that a competitor manifests in the markets it overlaps with the focal firm (Chen, 1996:106). The concept has been developed in marketing literature and multiple-point competition studies. The literature has generally suggested that 1) firms serve each unique market; and 2) firms in the same market are considered as direct competitors. Building upon the traditional marketing literature, studies of multiple-point competition have examined the effect of multimarket contact on rivalry in a given market (Boeker, Goodstein, Stephan and Murrman, 1994). The underlying idea is that firms do not compete in a single market, but in a set(s) of markets. The degree of similarities in the set(s) of markets of two firms and the relative importance of one firm to the other in each of these markets determine the extent to which these two firms become head-on rivals and engage in direct competition.

However, Chen (1996) pointed out that the major weakness of multiple-point competition studies is that, these studies focus on testing the effect of multimarket contact on rivalry in a given market and ignored the effect of mutual forbearance between competing firms. Mutual forbearance between competing firms vary not from market to market or firm to firm but from relationship to relationship (Baum and Korn, 1996).

The limitation of competitor analysis based on marketing and multiple-point competition give rises to the necessity of simultaneous consideration of these market based theories and the theory of resource-based view of the firm.

The second construct, ***Resource Similarity*** is defined as the extent to which a firm possesses strategic endowments, in terms of both type and amount, comparable to those of its competitors (Chen, 1996:107). Other things being equal, the higher similarities in resources between two firms, the greater the threats posed to both firms. Chen (1996) pointed out that if an individual firm is used as a unit of analysis, then each firm should be defined as a bundle of unique tangible and intangible resources and capabilities (Penrose, 1959; Wernerfelt, 1984) and competitors should be differentiates in terms of resources (Amit and Schoemaker, 1993; Barney, 1991; Dosi and Winter, 1994; Mahoney and Pandian, 1992; Teece, Rumelt). This perspective, referred to as the resource-based view of the firm, suggests that a firm's competitive position and relative advantage in the industry relies on its unique resource bundle (Conner, 1994; Rumelt, 1984) which constraints or leverages its strategic actions (and responses) against its rivals. Thus, resource endowment is a firm-specific factor, and a vital issue in competitive strategy.

Although the resource-based view of the firm helps to differentiate

competitors, a basic assumption of this perspective is that resource bundles and capabilities are heterogeneously distributed across firms because each firm acquires and manages its resources in different ways. The major limitation of the resource-based view of the firm in its application to predict rivalry is that the external competitive environment (which is the arena of competition) is generally considered as given, or even ignored in competitor analysis (Amit and Schoemaker, 1993; Chen, 1996).

In sum, simultaneous consideration of both market commonality and resource similarity comparisons is necessary for both conceptual and empirical research on inter-firm rivalry (Chen, 1996). For example, by comparing firms on the basis of market commonality and resource similarity, we can simultaneously examine each firm's opportunities and threats in terms of markets where it competes and strengths and weaknesses in resources which it possesses. Moreover, a thorough analysis of competitors along the two dimensions (market commonality and resource similarity) helps to predict the extent of rivalry among competitors.

Compared with most previous studies, Chen's (1996) conceptualization is more comprehensive and theory-driven. The essence of his argument is that there is a unique resource endowment and market profile for each firm, and a comparison of these two dimensions between

competitors illuminates the competitive relationship between the firms and predicts their competitive behavior within the industry. In addition, Chen highlighted the concept of competitive asymmetry and mutual forbearance which have been ignored in most conventional strategy literature. The notion of competitive asymmetry is that for a given pair of firms, each firm may not pose an equal degree of threat to its competitors. For example, A considers B and C as its competitors, but from the B's perspective C is a competitor while A is not. The concept of mutual forbearance suggests that firms competing in multiple markets would be less motivated to compete aggressively with their rivals. This is because they anticipate retaliation across all the other markets overlapping with its rivals.

So far no empirical works have examined how the two constructs - market commonality and resource similarity would influence the extent of rivalry among firms. The present study therefore empirically examines the two constructs, and the relationship between the two constructs and performance differences between competitors will also be investigated.

Strategic Groups, Competitor Analysis and Inter-firm Rivalry

As we mentioned in the opening of this chapter, the utility of strategic group concept lies in identification of the most intense rivals in an industry. Integrating Chen's (1996) conceptualization of competitor

analysis (as discussed above) with strategic group concept developed in the previous studies, we suggest that the formation of strategic groups would be driven by competitive intensity which is defined by the extent of market commonality and resource similarity.

It should be noted that Chen proposed that one firm's perspective on the extent of rivalry can be different from that of its rivals due to strategic asymmetry and mutual forbearance of the firms. In other words, whether the focal firm should consider its competitor as the same strategic group member depends on the competitor's relative strategic position to the firm. The relative strategic position of the competitor depends on whether the competitor is likely to initiate the attack to the firm or respond to attack by the firm.

Chen also suggested that a pair of firms which are close competitors may not necessarily be the most intense rivals. These firms become the most intense competitors if they share high degree of both market commonality and resource similarity. However, the intensity of rivalry will be reduced if competitive asymmetry and mutual forbearance exist between the competitors. For example, if the extent of market commonality is high between two firms, they posit equal threat to each other. And if one firm attacks aggressive in one of the markets, it may suffer from the other firms' responses (attacks) across all market in which

they are competing. On the other hand, if there are nothing overlapping between a pair of firms in market profiles and resource profiles, there is no competitive relationship between them.

Strategic Group and Firm Performance

Chen's propositions suggested that both market commonality and resource similarity between firms erect the extent of rivalry between firms. The extent of rivalry in turn influences performance of the firms. The importance of study on performance consequences of strategic group formation has been extensively discussed in prior literature. Porter (1980:134) thought that the different levels of mobility barriers were the reason for why some firms in an industry would be persistently more profitable than others. Of course, mobility barriers can change as a result of changes in strategy.

Some previous empirical studies have examined the link between strategic group membership and performance. These studies generally suggested that the extent of within-group rivalry differed among strategic groups, and consequently, the average performance of strategic group members would differ among the groups. Because of the existence of mobility barriers, the degree of intra-group rivalry is generally higher than that of inter-group rivalry. Porter (1979) found that firm-specific factors of

strategic group members such as risk profiles, scale differences, asset endowment, and ability to execute strategy had significant impact on their performance. Cool and Schendel (1988) found that the risk-return properties of strategic investment among firms significantly influenced strategic group members' performance.

Previous strategic group studies suggested that the linkage between strategic groups and performance lies on the concept of mobility barriers. Cool et al. (1994:220) noted that:

> "As the concept of mobility barriers gained popularity, strategic groups became increasingly viewed strategic as 'walled medieval cities': protected by their wall, these collectives entities try to fend off invasions by hostile intruders. Cities that have higher and thicker walls than others are more successful in protecting themselves."

In other words, strategic groups with higher mobility barriers than others tend to be more profitable (Cool and Dierickx, 1993). Following this convention, performance differences is the basis for comparison of performance between firms. Because strategic group study involves industry and group phenomena, the performance comparison is group to group basis, and not firm to firm basis. Thus, performance differences are used in our hypotheses.

Mehra (1994) noted that it is essential to clearly establish the linkage between strategic groups and performance. Thomas and

Venkatraman (1988:541) argued that:

> "[I]f strategic groups are to be truly useful for theory construction in strategic management, then there should be a relationship between strategic group membership and performance criteria."

For this reason, if we attempt to incorporate the two constructs conceptualized by Chen, we should explicitly take performance consequences into account in our theory development. According to his proposition discussed earlier, rivalry between competitors become more intense as the extent of market commonality or that of resource similarity increases. Since the extent of rivalry has a negative impact on performance of the firms (Porter, 1980), it is predicted that the extent of market commonality and resource similarity are negatively associated with the performance of these firms.

However, due to the competitive asymmetry existed between the competing firms, although these firms are head-to-head competitors, they may face different competitive pressures, resulting in different performance consequences. For this reason, we suggested that the impact of the extent of market commonality and that of resource similarity on performance may differ between competitors, depending upon which competitor's perspective is taken. In the present study, we define the extent of market commonality and resource similarity from each side of

competing firms and suggest that the firm which faces a higher degree of market commonality and/or resource similarity tends to attain relatively low performance than its competitor . Thus, in the view of one firm (a focal firm) over its competitor, a higher degree of market commonality and resource similarity will lead to lower performance of the former, and higher performance of the latter, suggesting a larger (and negative) performance difference between the two firms.

Thus, we have the following hypothesis:

H1a : *The extent of market commonality between competitors is negatively associated with their performance differences.*

H1b : *The extent of resource similarity between competitors is negatively associated with their performance differences.*

While both market forces and resource endowments of a firm are two key factors that influence the firm's performance, previous studies have generally suggested that the former had a stronger impact on the firm's performance than the latter. In Gimeno and Woo's (1996) study, they examined over 3,000 city-pair markets of the US airline industry and found that strategic similarity only moderately increased the intensity of rivalry, whereas multimarket contact strongly decreased it. Chen and Miller (1994) examined how competitive attacks can best reduce the chances of retaliation in airline industry. Their study suggested that

motivation was a necessary condition and prerequisite for competitive behavior and it was a more direct and stronger predictor of inter-firm rivalry than capability of firms. These studies generally support the argument that market forces have a more direct, visible and immediate effects on firm's competitive behavior and hence performance. Thus, building on the previous studies, we suggest that the influence of market commonality on the extent of rivalry between firms is relatively stronger than that of resource similarity, and thus, the former leads to larger performance differences between the firms than the latter. Therefore, we have the following hypothesis:

> *H2a : Market commonality has a stronger influence on performance difference between firms than resource similarity.*

Some may argue that market commonality and resource similarity may not always influence firms' performance separately; that is, the impact of these factors on performance may be interacted with each other. For example, firms which possess similar set of resources and share little market commonality and those firms which also posses similar set of resource yet compete in same set(s) of markets may face different competitive pressures. Similarly, the extent of rivalry of firms competing in overlapping markets may vary depending upon resource similarity between the firms. Thus, we suggest that there is an interaction effect between market commonality and resource similarity on the extent of

rivalry between firms, and hence, performance differences between these firms. On this basis, we hypothesize that:

> *H2b : There is an interaction effect between market commonality and resource similarity on performance differences between firms*

The following chapter describes the methods used to examine the above hypotheses, followed by the discussion of the results and findings of the present study.

CHAPTER IV

METHODOLOGY

This chapter deals with the methodology of the present study. The chapter covers discussion on sample, measures and analytical strategies.

Sample

The sample of the present study involves eighteen Japanese firms in the automobile industry in Japan. The source of the data derived from two Japanese directories, Analysts' Guide 1996, published by Daiwa Institute of Research Ltd.; and Kaisha Shikiho by Toyokeizai (Corporations' Seasonal Report: First Issue 1997). The first database provides the detailed accounting and financial information of all the Japanese firms listed in the Tokyo and Osaka Stock Exchange Markets. We extracted the data of the latest five years for our analysis. The measurements of market commonality, resource similarity and performance are based on the information reported in the Analysts' Guide and Kaisha Shikiho (Toyokeizai 1996).

There are total 18 firms in our sample which represent a major part of auto manufacturers in Japan. The latest annual sales (as of March 1996) of these firms were ranging from 52,569 to 7,957,152 millions yen,

and total assets from 69,514 to 6,543,864 million yen (see Appendix 4). The data also showed that the sales to total assets ratios of these firms were greater than 1, suggesting that these firms were operating quite efficiently. More important, the growth rate of sales as well as that of net income of the firms were negative in most time in the past five years. There may be several reasons for these negative rates of growth. First, Japanese automobile manufacturers are export-oriented, and the negative figures may reflect the fact that Japanese yen had been becoming stronger over US dollar during this period. Second, the Japanese automobile industry had faced the saturation of the local and overseas auto markets. In either case, these negative signs represent a high competitive intensity within the global automotive industry.

Measures

In order to test Chen's (1996) proposition in relation to the concept of strategic group, the formula which he proposed to measure market commonality and resource similarity are used to operationalize the constructs. We then examine the relationship between these two constructs and performance difference between firms.

Independent Variables

Market Commonality According to Chen (1996), market

commonality is defined as the extent to which a competitor overlaps markets with the focal firm. The extent of market commonality, as Chen suggested, is measured as followings:

$$M_{ab} = \sum_{i=1}^{n} (P_{ai} / P_a) \times (P_{bi} / P_i)$$

where M_{ab} = Market commonality of the automobile manufacturer b with the focal firm a;
P_{ai} = Portion of sales of product category i produced by firm a;
P_a = Total sales of all product category produced by firm a
P_{bi} = Portion of sales of product category i produced by firm b
P_i = The sum of sales volume of product category i produced by all the sample firms
i = a product category

Following the conventional product-market definition, we defined market of the firms in terms of product categories. The product categories we identified in the present study are:

1) ordinary cars;

2) ordinary cars (OEM);

3) small to medium sized commercial cars;

4) small to medium sized commercial cars (OEM);

5) large commercial cars (buses, trucks, special equipment cars);

6) motor cycles;

7) engines and car components;

8) general industrial machinery and aircraft; and

9) special industrial machinery.

The market commonality was measured using the sales proportion of each product category of each individual firm relative to its total sales. The measure of market commonality ranges between 0 to 1. The measure represents the sum of overlapping markets of the focal firm to its counterpart across all markets. P_{ai} in the above formula referred to the sales volume of one product category of the focal firm, like ordinary cars, over the total sales of all product categories of the focal firm (P_a), and then times the sales volume of the same product category (i.e., ordinary cars) of its counterpart (P_{bi}) over the sum of sales volume of ordinary cars of all eighteen firms (P_i). For example, the sales of each product category of the focal firm (Pa_i) of the above are represented by $Pa_{i\ 1}$, ... $Pa_{i\ 9}$. Whereas, Pa will be the summation of $Pa_{i\ 1}$ to $Pa_{i\ 9}$. Similarly, Pb_i represents the sales of a competitor in a specific product category. Then, P_i will be the summation of the sales of that specific product category for all firms in the industry (including the focal firm). The same procedure repeats to other product categories of all firms until all market commonality of all pairs of firms are computed.

Resource Similarity We use the approach analogous to the market commonality to calculate the resource similarity between firms.

Resource similarity is defined as the extent to which a given competitor possesses strategic endowments comparable, in terms of both type and amount, to those of the focal firm (Chen, 1996). The extent of resource similarity, measured using the similar method as market commonality, is as the followings:

$$R_{ab} = \sum_{i=1}^{n} (A_{ai} / A_a) \times (A_{bi} / A_i)$$

where R_{ab} = Resource similarity of automobile manufacturer b with the focal firm a;

A_{ai} = Asset type i possesses by firm a

A_a = Total assets of firm a

A_{bi} = Asset type i possesses by firm b

A_i = The sum of asset type i possesses by all the sample firms

i = An asset type possesses items (such as depreciables, land, construction in progress, intangible assets, securities, long term loans, and deferred assets under total assets in the balance sheet) by each firm in the sample

We extracted financial items from the balance sheet as the basis for comparing firms' resources. The reason for using these financial items to measure resource similarity is that they reflect both quantitative and qualitative aspects of a firm's resources, and they are objective measures which make comparison between firms' resources easier. For example, under the current assets, there are items like cash and deposits, notes receivable, accounts receivable, securities, finished goods, goods in process, and materials. Under fixed assets, there are items such as depreciables, land, construction in progress, intangible assets, securities,

long term loans, and deferred assets. The similarity in resource between firms is compared item by item, and each item is represented by symbol *i* in the formula, just like product category *i* in the formula of market commonality.

Interaction Term In order to examine the interaction effect between market commonality and resource similarity, an interaction term, (MC)(RS), was calculated by market commonality (MC) times resource similarity (RS).

Dependent Variables

Performance Differences Performance differences were used as dependent variables in the present study. The performance information used in the present study was extracted from the Analysts' Guide (Daiwa Institute of Research, 1996). We looked at ROA as well as the various growth rates of the samples firms, including growth in fixed assets, market value, stockholders' return, and total assets, of the year 1996. Besides, a five year average of these performance variables were also used as dependent variables.

There are different ways of measuring performance in existing

literature. Financial variables were frequently used as indicators of firms' performance. ROA is the most common performance measure used in strategic management studies in general and strategic group studies in particular. ROA is one of the indicator of profitability and is the most frequently used variables in strategic group studies (e.g., Dess and Davis, 1984; Dixon and Boal, 1996; Mehra, 1996). Similarly, stock-related variables are common measures to evaluate firms' performance, for example, P/E ratio (Mehra, 1996). In the present study, total assets, fixed assets, stockholders' return and market value were used as performance variables besides ROA. Total assets and fixed assets represent the asset-based measures of performance whereas stockholders' return and market value represent the stock-related performance. They are interrelated but not necessarily the same. For example, if a firm is making a substantial amount of profits, normally the stockholders' return increases and the stock price rises, and consequently, the market value of the firm increases. However, the reverse may not be always true because high market value of a firm may be a result of speculation, for instance. Thus, the simultaneous use of both asset-based and stock-related measures provides a more thorough and objective assessment of firms' performance.

Because the primary scope of our study is to test the impact of market commonality and resource similarity on performance of the firms, we do not insert any control variables in our analysis. We assume that 1)

most firm-specific and market-specific attributes of the firms are represented by the two independent variables; and 2) industry-specific or home country-specific factors are controlled as we focus on the Japanese automobile industry.

Analytical Strategies

Ordinary Least Square (OLS) and Moderating Multiple Regression (MMR) were used to different hypotheses. Table 2 provides the summary of descriptive statistics and correlations analysis between performance variables and market commonality and resource similarity measures. The table shows that market commonality and resource similarity measures are highly correlated (.76). To resolve the multicollinearity problems, we examined three separate regression models. The regression models used in the analysis are listed as follows:

$$\text{Model 1} \qquad P = \alpha + \beta_1 MC + \varepsilon$$

$$\text{Model 2} \qquad P = \alpha + \beta_1 RS + \varepsilon$$

where P = Performance difference between a pair of firms
MC = Market commonality between a pair of firms
RS = Resource similarity between a pair of firms
α = intercept
β = regression coefficient
ε = error term

TABLE 2

Descriptive Statistics and Correlation for the Variables [a, b]

Variables	Mean	s.d	1	2	3	4	5	6	7	8	9	10	11	12
1 Market Commonality (MC)	.05	.07												
2 Resource Similarity (RS)	.05	.07	.77 **											
3 MC*RS	.01	.02	.86 **	.86 **										
4 Return on Assets - Mar 96	.00	1.52	-.16 **	-.14 *	-.18 **									
5 Return on Assets - 5 year average	.00	1.40	-.24 **	-.24 **	-.36 **	.25 **								
6 Growth in Fixed Assets - Mar 96	.00	8.96	-.27 **	-.40 **	-.39 **	.26 **	.60 **							
7 Growth in Fixed Assets - 5 year average	.00	6.00	-.19 **	-.24 **	-.28 **	.32 **	.55 **	.84 **						
8 Growth in Market Value - Mar 96	.00	20.70	-.10	-.12 *	-.06	.54 **	.13 *	.05	-.03					
9 Growth in Market Value - 5 year average	.00	10.34	-.17 **	-.18 **	-.12 *	.58 **	.18 **	.02	-.03	.90 **				
10 Growth in Stockholders' Return - Mar 96	.00	20.78	-.10	-.12 *	-.06	.54 **	.13 *	.04	-.03	1.00 **	.90 **			
11 Growth in Stockholders' Return - 5 year average	.00	10.27	-.17 **	-.18 **	-.12 *	.57 **	.19 **	.02	-.03	.91 **	1.00 **	.91 **		
12 Growth in Total Assets - Mar 96	.00	8.96	-.27 **	-.40 **	-.39 **	.26 **	.60 **	1.00 **	.84 **	.05	.02	.04	0.2	
13 Growth in Total Assets - 5 year average	.00	6.00	-.19 **	-.24 **	-.28 **	.32 **	.55 **	.84 **	1.00 **	.03	-.03	-.03	0.0	.84 **

[a] N=306

[b] ** $p < .01$, * $p < .05$, two-tailed test

We used MMR as the means to investigate the interaction effect. The problem of multicollinearity is not a major issue here because recent development in management research method had found that the detrimental impact of multicollinearity on power in MMR was unwarranted (Aiken and West, 1991; Cronbach, 1987). Earlier studies (e.g., Morris, Sherman, and Mansfield, 1986; Smith, Sasaki, 1979) had argued that the existence of multicollinearity in MMR resulted in unstable regression coefficients, larger error terms and lower power. Therefore, when multicollinearity is the case in MMR, it was believed that MMR had inadequate power to detect moderating effects. However, Cronbach (1987) pointed out the effects of multicollinearity in MMR was that it increases the rounding errors and regression coefficient sampling errors. Aiken and West (1991) argued that the problem of multicollinearity in MMR was on the difficulty in interpreting the regression coefficients and not on the power.

Therefore, the followings regression models were used to detect interaction effect:

Model 1 $\quad P = \alpha + \beta_1 MC + \beta_2 RS + \varepsilon$

Model 2 $\quad P = \alpha + \beta_1 MC + \beta_2 RS + \beta_3 (MC)(RS) + \varepsilon$ (interaction model)

The results are described and discussed in the following chapters.

CHAPTER V

RESULTS

Results Ordinary Least Square (OLS) Analysis

The results of regression analysis were summarized in Table 3. Each of the independent variables, MC and RS, was regressed to the dependent variable (performance differences). Table 3 shows correlations varied from .1 to .4 for different dependent variables used, whereas R^2 from .01 to .16. There are two distinctive observations, firstly, as the table depicts, all regression coefficients were found significant ($p < .05$) except two of them (Growth in Market Value - Mar 96 and Growth in Stockholders' Return). Secondly, all of them were in negative sign. The argument that MC and RS had a significantly negative impact on performance differences seems strongly supported.

Moreover, the model of fit was examined by calculating the effect size (ES) suggested by Cohen (1975) [1]. The results show even at a R^2 of .02, the power ranged from .5 to .7, suggesting that performance differences are satisfactorily explained by both market commonality and resource similarity variables. These results are consistent with Hypothesis 1a and 1b.

TABLE 3

Summary of Regression Results [a, b, c]

Dependent Variables	R	R^2	R_a^2	Power $k_B = 1$	Models 1 β_{MC}	Models 2 β_{RS}
ROA - Mar 96	.16	.02	.02	.7-.8	-3.28 **	
	.14	.02	.02	.7		-2.97 *
ROA - 5 yr avg	.24	.06	.06	.99	-4.70 **	
	.24	.06	.05	.95-.99		-4.64 **
Growth in Fixed Assets - Mar 96	.27	.07	.07	.99	-33.85 **	
	.40	.16	.16	.99		-49.48 **
Growth in Fixed Assets - 5 yr avg	.19	.04	.03	.85-.9	-15.72 **	
	.24	.06	.06	.99		-20.15 **
Growth in Market Value - Mar 96	.10	.01	.01	.3-.5	-29.75	
	.12	.01	.01	.5-.6		-34.87 *
Growth in Market Value - 5 yr avg	.17	.03	.03	.85-.9	-25.17 **	
	.18	.03	.03	.85-.9		-26.23 **
Growth in Stockholders' Return - Mar 96	.10	.01	.01	.3-.5	-29.01	
	.12	.01	.01	.5-.6		-33.26 *
Growth in Stockholders' Return - 5 yr avg	.17	.03	.03	.8-.85	-24.13 **	
	.18	.03	.03	.85-.9		-25.20 **
Growth in Total Assets - Mar 96	.27	.07	.07	.99	-33.85 **	
	.40	.16	.16	.99		-49.48 **
Growth in Total Assets - 5 yr avg	.19	.04	.03	.9-.95	-15.72 **	
	.24	.06	.06	.99		-20.15 **

[a] $N = 306$

[b] * $p < .05$; ** $p < .01$, two-tailed test

[c] R^2_a: adjusted R^2

Results of Moderating Multiple Regression (MMR) Analysis

Table 4 summarized the MMR results, multiple R ranged from .12 to .43, whereas R^2 from .01 to .19. In addition, change in R^2 varied from .01 to .1. In Table 4, most of the interaction terms (the most right hand column) are significant (*t*-statistic). The results suggest that most interaction terms had significant impact on performance differences.

The existence of the effect of interaction term was examined by testing the changes in R^2 between the two-terms model and the three-term model (i.e., the model with two independent variables plus one interaction variable). The changes in R^2 are presented in Table 3 labeled as ΔR^2. The ΔR^2 ranged from .01 to .1 which mean that the interaction terms accounted for 1% to 10% improvement in explaining of variance in performance differences.

Whether this improvement was significant or not was examined by the method suggested by Jaccard, Turrisi and Wan (1990) [2]. The results suggest that the improvement in R^2 (i.e., $_{\Delta}R^2$) for all the models were significant. Moreover, The power of fit of the models was examined by calculating the effect size [3] of the change in R^2. The overall power of fit looks good except for the model of Growth in Market Value - Mar 96 (.3). Overall, our findings are consistent with Hypothesis 2b.

TABLE 4

Summary of Moderating Multiple Regression Results [a, b, c]

Dependent Variables	Multiple R	R^2	R_a^2	ΔR^2	*F* value	Power $k_B = 3$	Models 1 $\beta_{1\ MC}$	1 $\beta_{2\ RS}$	2 $\beta_{1\ MC}$	2 $\beta_{2\ RS}$	2 $\beta_{3\ (MS)(RS)}$
ROA - Mar 96	.16	.03	.02				-2.41	-1.13			
	.18	.03	.02	.01	2.37				-.22	1.11	-17.05
ROA - 5 yr avg	.26	.07	.06				-2.74	-2.55			
	.40	.16	.15	.10	34.97 *	.99			4.50 *	4.85 *	-56.26 **
Growth in Fixed Assets - Mar 96	.40	.16	.16				10.44	-57.45 *			
	.43	.19	.18	.03	9.99 *	.8-.85			34.69 *	-32.66 *	-188.44 **
Growth in Fixed Assets - 5 yr avg	.24	.06	.05				-.44	-19.81 **			
	.30	.09	.08	.03	9.36 *	.75-.8			16.32	-2.68	-130.28 **
Growth in Market Value - Mar 96	.12	.02	.01				-6.96	-29.56			
	.17	.03	.02	.01	3.91 *	.3			-45.51	-68.96 *	299.57 *
Growth in Market Value - 5 yr avg	.19	.04	.03				-12.01	-17.07			
	.23	.05	.04	.02	5.72 *	.5-.6			-35.01 *	.01 *	.02 *
Growth in Stockholders' Return - Mar 96	.12	.01	.01				-8.18	-27.01			
	.16	.03	.02	.01	3.59	.5-.6			-45.41	-65.07 *	289.30
Growth in Stockholders' Return - 5 yr avg	.18	.03	.03				-11.43	-16.47			
	.21	.05	.04	.01	3.73	.5-.6			-29.92	-35.36 *	143.64
Growth in Total Assets - Mar 96	.40	.16	.16				10.44	-57.45 **			
	.43	.19	.18	.03	9.90 *	.8-.85			34.69 *	-32.66 *	-188.44 **
Growth in Total Assets - 5 yr avg	.24	.06	.05				-.44	-19.81 **			
	.30	.09	.08	.03	9.36 *	.75-.8			16.32	-2.68	-130.28 **

[a] $N = 306$

[b] * $p < .05$; ** $p < .01$, two-tailed test

[c] $F_{\alpha, v1=1\ v2=302}$; * $p < .05$; ** $p < .01$; see also endnote 2

We found that an interaction effect exists in the relationship of MC and RS on performance differences. In order to examine the nature of interaction effect, we compared the slope (coefficients) at both high- and low-endpoints for each of the independent variables. The high-endpoint refers to the product of the mean of the interaction variables (MC and RS) plus one standard deviation (s.d.), and the low-endpoint minus one standard deviation. The result of calculation of the coefficients at the high- and low-endpoint are displayed in Table 5. As suggested, in Table 5, the slope of both MC and RS is positive (e.g., a coefficient at the low-end point is smaller than that at the high-end point) for financial measures of performance differences (i.e., ROA, Growth in Fixed Assets and Growth in Total Assets for both Mar 96 and 5 year-average). On the other hand the slope in negative (i.e., a coefficient at the low-end point is larger than that of the high-end point) for the stock-related measures of performance consequences (i.e., Growth in Market Value and Growth in Stockholders' Return for both Mar 96 and 5 year-average). This results implies that the interaction effects of MC and RS differ, depending upon whether performance differences are measured by financial measures or by stock-related measures. Specifically, the results of the analysis suggest that the impact of MC (RS) on the differences in financial performance measures is strengthened as RS (MC) becomes large. On the other hand, the impact of MC (RS) on the differences in stockholder-related performance measures is weakened as RS (MC) becomes larger.

TABLE 5
Nature of Interaction Effects

Dependent Variables	Values of high- and low- endpoints			Independent Variables		
		high	low	MC	RS	(MC)(RS)
ROA - Mar 96	β at MC	-2.67	-0.21			
	β at RS	-0.57	1.20	-.22	1.11	-17.05
ROA - 5 yr avg	β at RS	2.05	4.51			
	β at MC	-0.69	5.15	4.50 *	4.85 *	-56.26 **
Growth in Fixed Assets - Mar 96	β at MC	7.56	34.77			
	β at RS	-51.22	-31.66	34.69 **	-32.66 *	-188.44 **
Growth in Fixed Assets - 5 yr avg	β at RS	-2.44	16.37			
	β at MC	-15.51	-1.99	16.32	-2.68	-130.28 **
Growth in Market Value - Mar 96	β at MC	-2.37	-45.63			
	β at RS	-39.45	-70.55	-45.51	-68.96 *	299.57 *
Growth in Market Value - 5 yr avg	β at RS	-35.01	-35.01			
	β at MC	0.01	0.01	-35.01 *	.01 *	.02 *
Growth in Stockholders' Return - Mar 96	β at MC	-3.75	-45.53			
	β at RS	-36.57	-66.60	-45.41	-65.07 *	289.30
Growth in Stockholders' Return - 5 yr avg	β at RS	-9.23	-29.98			
	β at MC	-21.22	-36.13	-29.92	-35.36 *	143.64
Growth in Total Assets - Mar 96	β at MC	7.56	34.77			
	β at RS	-51.22	-31.66	34.69 **	-32.66 *	-188.44 **
Growth in Total Assets - 5 yr avg	β at RS	-2.44	16.37			
	β at MC	-15.51	-1.99	16.32	-2.68	-130.28 **

* $p < .05$; ** $p < .01$, two-tailed test

Concerning Hypothesis 2a, it seems that there is inadequate evidence to support the hypothesis. Hypothesis 2a predicted that market commonality would have a stronger impact on the performance differences than resource similarity. This hypothesis is derived from the proposition that market commonality is a stronger predictor of competitive attack and response than resource similarity (Chen, 1996).

The more frequently the firms involve competitive moves (i.e., competitive attacks and responses), the larger the performance differences between these firms are expected. However, our analysis found that the influence of MC on performance differences was not as great as RS. Table 6 provides the comparison of standardized regression coefficients. As suggested by Mendenhall and Sinich (1993:328), the standardized regression coefficients (or beta coefficients) [4] were used as parameters to compare the strength of individual independent variables in each regression model. The standardized regression coefficients with a tick (√) indicate that the impact of the independent variables on performance differences is stronger than other variables. Out of our expectation, the results suggested that the influence of RS on performance differences was stronger than the MC in most models. Based on this analysis, Hypothesis 3b is not supported. Table 7 summarized the results of our hypotheses testing.

TABLE 6

Comparison of Standardized Regression Coefficients [a, b]

Dependent Variables	Beta MC		Beta RS	
ROA - Mar 96	-.01		.05	√
ROA - 5 yr avg	.23		.25	√
Growth in Fixed Assets - Mar 96	.28	√	-.26	
Growth in Fixed Assets - 5 yr avg	.20	√	-.03	
Growth in Market Value - Mar 96	-.16		-.24	√
Growth in Market Value - 5 yr avg	-.24		-.28	√
Growth in Stockholders' Return - Mar 96	-.16		.23	√
Growth in Stockholders' Return - 5 yr avg	-.21		-.25	√
Growth in Total Assets - Mar 96	.28	√	-.26	
Growth in Total Assets - 5 yr avg	.20	√	-.03	

[a] $N = 306$

[b] Beta=standardized regression coefficients, a √ indicates that the impact of that Beta is higher than another

TABLE 7
Summary of Hypotheses Testing

Hypotheses	Results
H1a: The extent of market commonality between competitors is negatively associated with their performance differences.	Support
H1b: The extent of resource similarity between competitors is negatively associated with their performance differences.	Support
H2a: Market commonality has a stronger influence on performance differences between firms than resource similarity.	Inadequate Support
H2b: An interaction term exists in the relationship of market commonality and resource similarity on performance differences between firms.	Support

Endnotes:

1 The effect size index $f^2 = R^2/1-R^2$, *c.f. Cohen, 1975.*

2 $F=(R^2_2 - R^2_1)/(k_2 - k_1) / (1- R^2_2)/(N - k_2 -1)$, *c.f. Jaccard, Turris & Wan, 1990.*

3 The effect size index $f^2 = R^2_2 - R^2_1 / 1 - R^2_1$ *where* R^2_2 *is the* R^2 *of the three-term interaction model and* R^2_1 *is the two-term model, c.f. Cohen, 1988.*

4 The formula for Beta Coefficients is $beta_k = B_k (S_k /S_Y)$ *where* S_k *is the standard deviation of the k th independent variable, c.f. SPSS for Windows Base System User's Guide.*

CHAPTER VI

FINDINGS AND DISCUSSION

We have discussed the statistical results in the previous chapter, in this chapter we discuss the findings and their implications. Incorporating Chen's (1996) proposition of the two constructs, market commonality and resource similarity, we found meaningful results and implications in our study. In the following, we first illustrate how competitor mapping of Chen's approach is used to predict strategic group membership. Then, we move to discussions of the results and implications for theory development.

Market Commonality and Resource Similarity Mapping in Japanese Automobile Manufacturing Industry

The market commonality measures of these 18 Japanese auto manufacturers are listed in Table 8. The measures ranged from 0 to .4. The figures show that the market commonality is not symmetric between pair of firms, that is, M_{ab} is not equal to M_{ba}. For example, from the point view of Mazda Motor (firm j), the market commonality measure of Toyota Motor (firm c) is .4 which is the highest among the sample firms in our analysis, however, from the perspective of Toyota, the measure of Mazda is .07.

TABLE 8

Market Commonality Mapping for Japanese Automobile Manufacturers [a, b]

Focal Firm	Code	a 7201	b 7202	c 7203	d 7205	e 7210	f 7211	g 7221	h 7222	i 7223	j 7261	k 7262	l 7263	m 7267	n 7269	o 7270	p 7224	q 7225	r 7226
a	7201		0.02	0.37	0.00	0.00	0.07	0.00	0.02	0.00	0.08	0.01	0.00	0.12	0.06	0.05	0.00	0.00	0.00
b	7202	0.05		0.27	0.03	0.02	0.18	0.10	0.00	0.02	0.04	0.08	0.01	0.02	0.01	0.00	0.00	0.00	0.00
c	7203	0.16	0.04		0.02	0.01	0.09	0.01	0.01	0.00	0.07	0.01	0.01	0.10	0.04	0.03	0.00	0.00	0.00
d	7205	0.02	0.07	0.23		0.09	0.18	0.00	0.09	0.00	0.01	0.08	0.00	0.01	0.00	0.00	0.01	0.01	0.01
e	7210	0.04	0.08	0.29	0.15		0.17	0.01	0.06	0.00	0.03	0.06	0.00	0.01	0.00	0.00	0.01	0.01	0.01
f	7211	0.10	0.09	0.30	0.04	0.02		0.04	0.01	0.01	0.04	0.04	0.00	0.06	0.03	0.02	0.01	0.01	0.00
g	7221	0.03	0.22	0.09	0.01	0.00	0.21		0.00	0.04	0.02	0.16	0.00	0.02	0.01	0.00	0.00	0.00	0.00
h	7222	0.14	0.01	0.24	0.12	0.05	0.06	0.00		0.00	0.05	0.07	0.00	0.09	0.04	0.03	0.00	0.00	0.00
i	7223	0.00	0.08	0.00	0.00	0.00	0.07	0.08	0.00		0.00	0.06	0.07	0.00	0.00	0.00	0.00	0.00	0.00
j	7261	0.18	0.03	0.40	0.00	0.01	0.07	0.01	0.01	0.00		0.01	0.01	0.11	0.05	0.03	0.00	0.00	0.00
k	7262	0.05	0.15	0.15	0.07	0.03	0.14	0.12	0.04	0.03	0.03		0.00	0.03	0.01	0.00	0.00	0.00	0.00
l	7263	0.04	0.03	0.16	0.00	0.01	0.02	0.00	0.00	0.08	0.03	0.01		0.02	0.01	0.00	0.00	0.00	0.00
m	7267	0.17	0.01	0.32	0.00	0.00	0.06	0.00	0.02	0.00	0.06	0.01	0.00		0.09	0.04	0.00	0.00	0.00
n	7269	0.18	0.01	0.30	0.00	0.00	0.06	0.00	0.02	0.00	0.06	0.01	0.00	0.21		0.06	0.00	0.00	0.00
o	7270	0.22	0.00	0.28	0.00	0.00	0.06	0.00	0.02	0.00	0.06	0.00	0.00	0.12	0.08		0.01	0.00	0.01
p	7224	0.03	0.05	0.15	0.06	0.03	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.06		0.10	0.01
q	7225	0.02	0.08	0.29	0.08	0.04	0.22	0.01	0.00	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.15		0.01
r	7226	0.08	0.08	0.31	0.07	0.04	0.20	0.01	0.00	0.00	0.03	0.01	0.00	0.01	0.03	0.08	0.02	0.01	

a	Nissan Motor	j	Mazda Motor Corporation
b	Isuzu Motors	k	Daihatsu Motor
c	Toyota Motor Corporation	l	Aichi Machine Industry
d	Hino Motors	m	Honda Motor
e	Nissan Diesel Motor	n	Suzuki Motor Corporation
f	Mitsubishi Motors Corporation	o	Fuji Heavy Industries
g	Toyota Auto Body	p	ShinMaywa Industries
h	Nissan Shatai	q	Komatsu Forklift
i	Kanto Auto Works	r	Kyokuto Kaihatsu Kogyo

[a] The focal firms are listed in the left-hand column; their respective counterparts are listed across the top of the table. The table should be read from left to right.

[b] To make the distinction between "0.00" because of rounding and a true "0.00", the former is shaded.

TABLE 9

Resource Similarity Mapping for Japanese Automobile Manufacturers [a, b]

Focal Firm	Code	a 7201	b 7202	c 7203	d 7205	e 7210	f 7211	g 7221	h 7222	i 7223	j 7261	k 7262	l 7263	m 7267	n 7269	o 7270	p 7224	q 7225	r 7226
a	7201		0.05	0.36	0.02	0.02	0.08	0.01	0.01	0.01	0.05	0.02	0.01	0.07	0.03	0.03	0.01	0.00	0.00
b	7202	0.18		0.29	0.02	0.02	0.09	0.01	0.01	0.01	0.06	0.02	0.01	0.08	0.03	0.03	0.01	0.01	0.01
c	7203	0.17	0.04		0.02	0.02	0.07	0.01	0.01	0.01	0.05	0.02	0.01	0.07	0.04	0.03	0.01	0.00	0.00
d	7205	0.16	0.06	0.31		0.02	0.10	0.01	0.01	0.01	0.06	0.02	0.01	0.08	0.03	0.03	0.01	0.00	0.00
e	7210	0.16	0.06	0.31	0.02		0.10	0.01	0.01	0.01	0.05	0.03	0.01	0.07	0.03	0.04	0.01	0.00	0.00
f	7211	0.15	0.05	0.29	0.02	0.02		0.01	0.01	0.01	0.06	0.02	0.01	0.08	0.03	0.03	0.01	0.01	0.00
g	7221	0.16	0.05	0.28	0.03	0.02	0.11		0.01	0.02	0.06	0.03	0.01	0.08	0.03	0.04	0.01	0.00	0.00
h	7222	0.15	0.05	0.29	0.03	0.02	0.11	0.02		0.01	0.06	0.03	0.01	0.07	0.03	0.04	0.01	0.01	0.00
i	7223	0.16	0.06	0.27	0.03	0.02	0.10	0.02	0.01		0.08	0.03	0.01	0.08	0.03	0.04	0.01	0.00	0.00
j	7261	0.16	0.06	0.32	0.02	0.02	0.09	0.01	0.01	0.01		0.02	0.01	0.08	0.04	0.03	0.01	0.00	0.00
k	7262	0.14	0.05	0.28	0.02	0.02	0.09	0.01	0.01	0.01	0.06		0.01	0.07	0.03	0.03	0.01	0.00	0.00
l	7263	0.17	0.06	0.30	0.03	0.02	0.09	0.01	0.01	0.01	0.06	0.02		0.07	0.04	0.04	0.01	0.01	0.01
m	7267	0.16	0.05	0.33	0.02	0.02	0.09	0.01	0.01	0.01	0.06	0.02	0.01		0.03	0.03	0.01	0.00	0.00
n	7269	0.12	0.04	0.38	0.02	0.01	0.08	0.01	0.01	0.01	0.06	0.02	0.01	0.08		0.03	0.01	0.00	0.00
o	7270	0.15	0.05	0.30	0.02	0.02	0.09	0.01	0.01	0.01	0.05	0.02	0.01	0.07	0.04		0.01	0.00	0.00
p	7224	0.13	0.09	0.25	0.02	0.02	0.10	0.01	0.01	0.01	0.07	0.02	0.01	0.06	0.04	0.05		0.01	0.01
q	7225	0.16	0.06	0.31	0.02	0.02	0.10	0.01	0.01	0.01	0.06	0.02	0.01	0.08	0.04	0.04	0.01		0.01
r	7226	0.17	0.09	0.27	0.02	0.02	0.09	0.01	0.01	0.01	0.07	0.02	0.01	0.07	0.03	0.04	0.03	0.01	

a	Nissan Motor	j	Mazda Motor Corporation
b	Isuzu Motors	k	Daihatsu Motor
c	Toyota Motor Corporation	l	Aichi Machine Industry
d	Hino Motors	m	Honda Motor
e	Nissan Diesel Motor	n	Suzuki Motor Corporation
f	Mitsubishi Motors Corporation	o	Fuji Heavy Industries
g	Toyota Auto Body	p	ShinMaywa Industries
h	Nissan Shatai	q	Komatsu Forklift
i	Kanto Auto Works	r	Kyokuto Kaihatsu Kogyo

[a] The focal firms are listed in the left-hand column; their respective counterparts are listed across the top of the table. The table should be read from left to right.

[b] To make the distinction between "0.00" because of rounding and a true "0.00", the former is shaded.

Table 9 depicts the resource similarity measures. They ranged from 0 to .38. Consistent with market commonality measures, R_{ab} is not equal to R_{ba}. For example, from the perspective of Suzuki Motor Suzuki Motor (firm n), Toyota's (firm c) resource similarity is .38 which is the highest in our analysis, while that of Toyota to Suzuki is .04. Overall they are consistent with the concept of competitive asymmetry.

The market commonality analysis suggests that the threat Toyota poses to Mazda is the greatest among firms in the industry while the reverse is not. This means Mazda may be more aware of Toyota's competitive moves and more sensitive to its competitive actions than other firms in the industry because, as the mapping suggests, it is most likely for Toyota to initiate an attack toward Mazda due to low risk in retaliation from Mazda. Whereas, based on our resource similarity analysis, it is most likely for Toyota to initiate an attack toward Suzuki. Because of dissimilarity in resource, Suzuki may not be capable of making effective responses to Toyota's attack due to resource constraint.

Another interesting finding based on our market commonality and resource similarity analyses is that Nissan Motor (firm a) and Toyota (firm c) share high market commonality and resource similarity with each other. From Nissan's perspective, the competitor with the highest market commonality is Toyota (.37), and from Toyota's perspective, Nissan has

also the highest market commonality (.16). Interestingly the resource similarity is also the highest for the pair of Nissan and Toyota among all the pairs of sample firms: resource similarity of Nissan to Toyota is .36 and that of Toyota to Nissan is .17. This implies that it is less likely for either Nissan or Toyota to initiate attack toward each other, but very likely to respond if attacked. According to the concept of mutual forbearance, the reason for both firms' reluctance to engage in direct competition is that since the market profile and resource sets of the both firms are similar, the attack to, and the retaliation from, either of the firms will threaten the competitive position of the both firms within the industry.

Figure 3a depicts the competitor mapping of Nissan and its counterparts whereas Figures 3b, 3c and 3d depict those of Toyota, Madza and Suzuki to their counterparts respectively. The figures following each of Figure 3a-3d were those partly enlarged the mapping of competitors with smaller scale (.00 to .03). The figures illustrate the essence and the utility of market commonality and resource similarity analysis in predicting formation of strategic group within an industry. As the figures show, from a focal firms' perspective, other firms fall into different competitive positions along the dimensions of market commonality and resource similarity. In addition, the use of different scale resulted in different grouping of firms. There are several implications for strategic group theory.

Figure 3a

Nissan to its counterparts

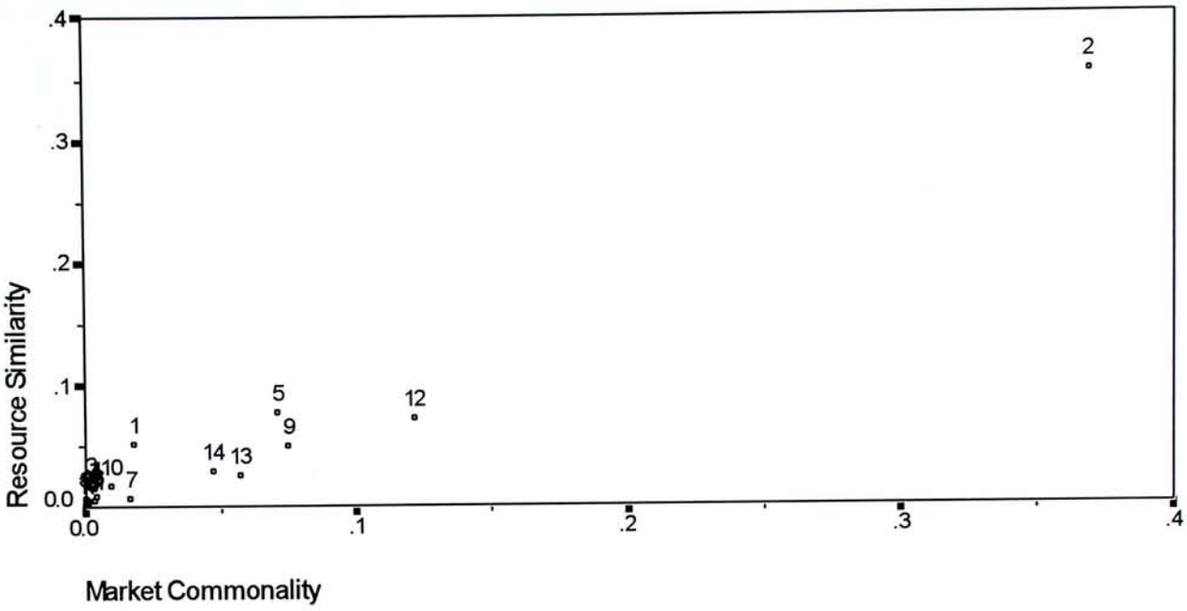
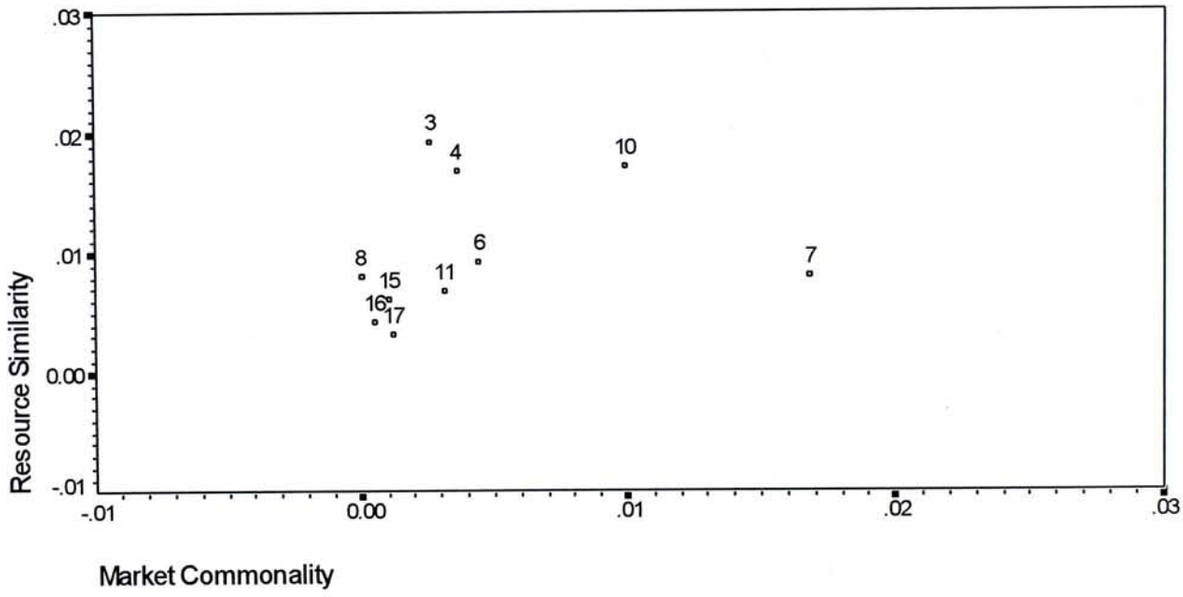


Figure 3a - Partly Enlarged

Nissan to its counterparts



Nissan to its counterparts

1=Isuzu
2=Toyota
3=Hino Motors
4=Nissan Diesel
5=Mitshubishi
6=Toyota Auto Body
7=Nissan Shatai
8=Kanto
9=Mazda
10=Daihatsu
11=Aichi
12=Honda
13=Suzuki
14=Fuji
15=ShinMaywa
16=Komatsu Forklift
17=Kyokuto Kaihatsu Kogyo

Figure 3b

Toyota to its counterparts

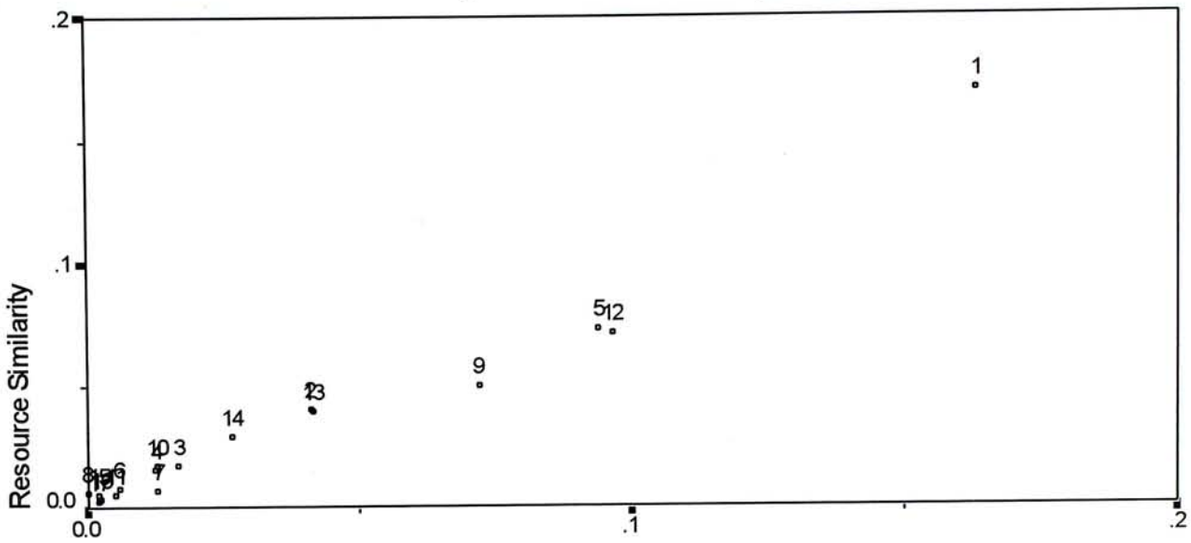
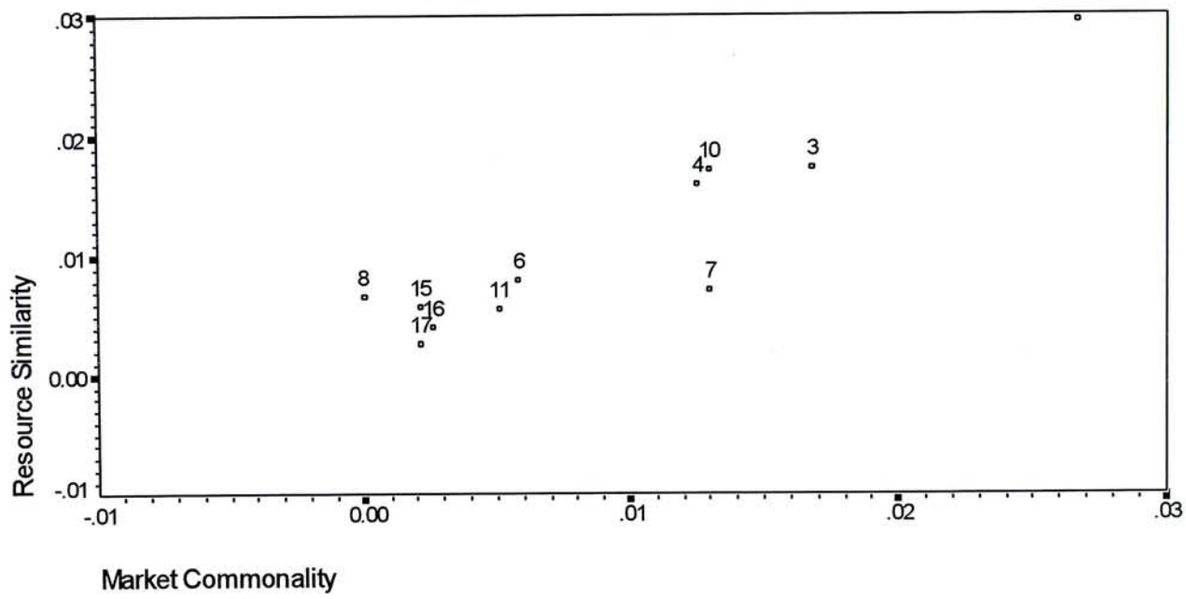


Figure 3b - Partly Enlarged

Toyota to its counterparts



Toyota to its counterparts

1=Nissan Motor
2=Isuzu
3=Hino Motors
4=Nissan Diesel
5=Mitshubishi
6=Toyota Auto Body
7=Nissan Shatai
8=Kanto
9=Mazda
10=Daihatsu
11=Aichi
12=Honda
13=Suzuki
14=Fuji
15=ShinMaywa
16=Komatsu Forklift
17=Kyokuto Kaihatsu Kogyo

Figure 3c

Mazda to its counterparts

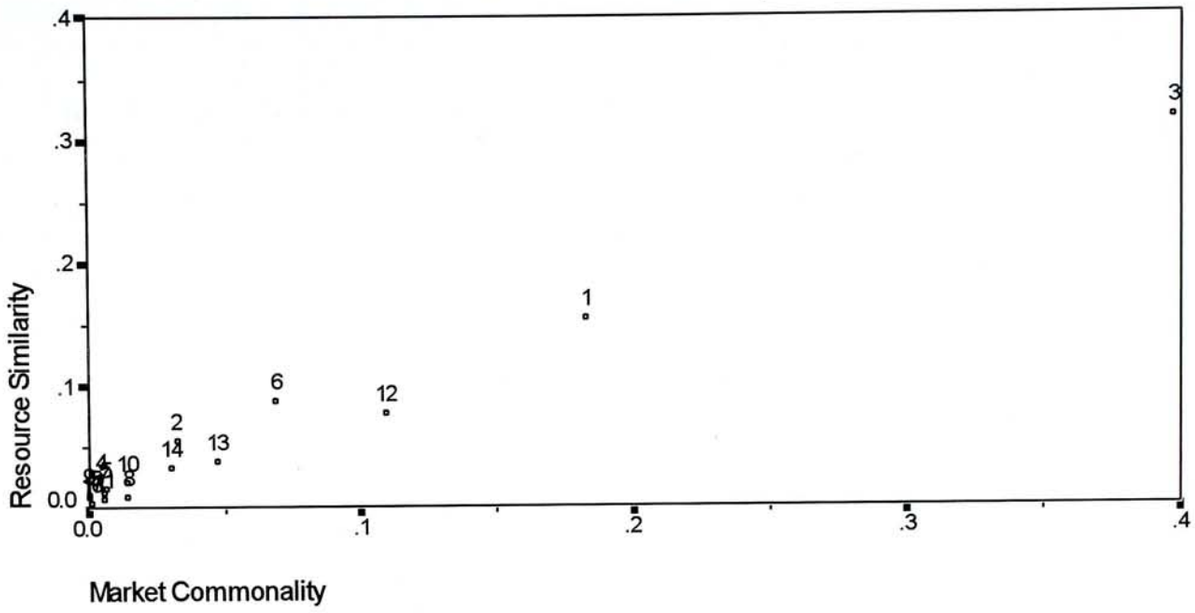
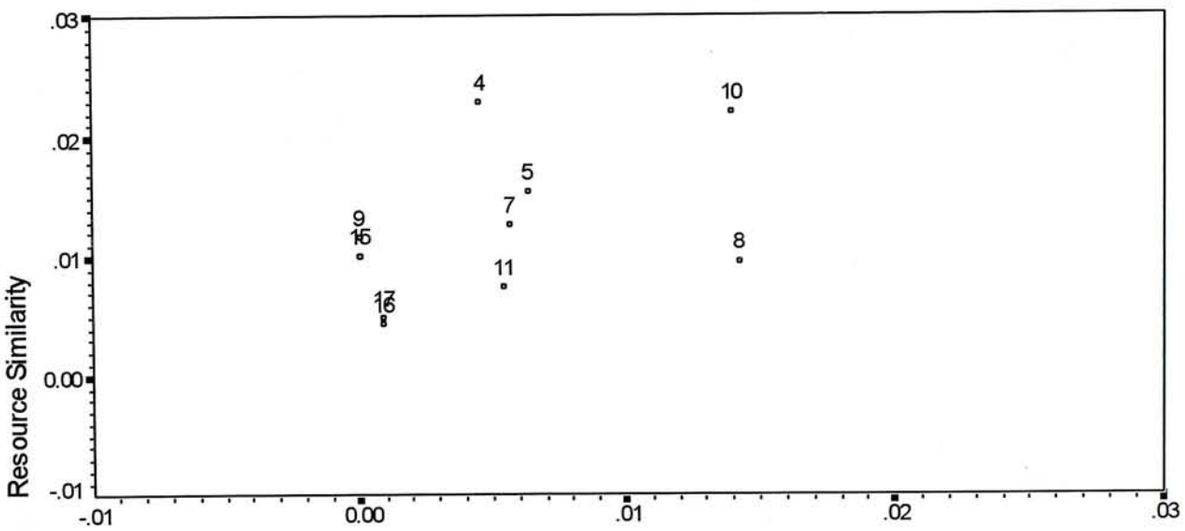


Figure 3c - Partly Enlarged

Mazda to its counterparts



Mazda to its counterparts

1=Nissan Motor
2=Isuzu
3=Toyota
4=Hino
5=Nissan Diesel
6=Mitsubishi
7=Toyota Auto Body
8=Nissan Shatai
9=Kanto
10=Daihatsu
11=Aichi
12=Honda
13=Suzuki
14=Fuji
15=ShinMaywa
16=Komatsu Forklift
17=Kyokuto Kaihatsu Kogyo

Figure 3d

Suzuki to its counterparts

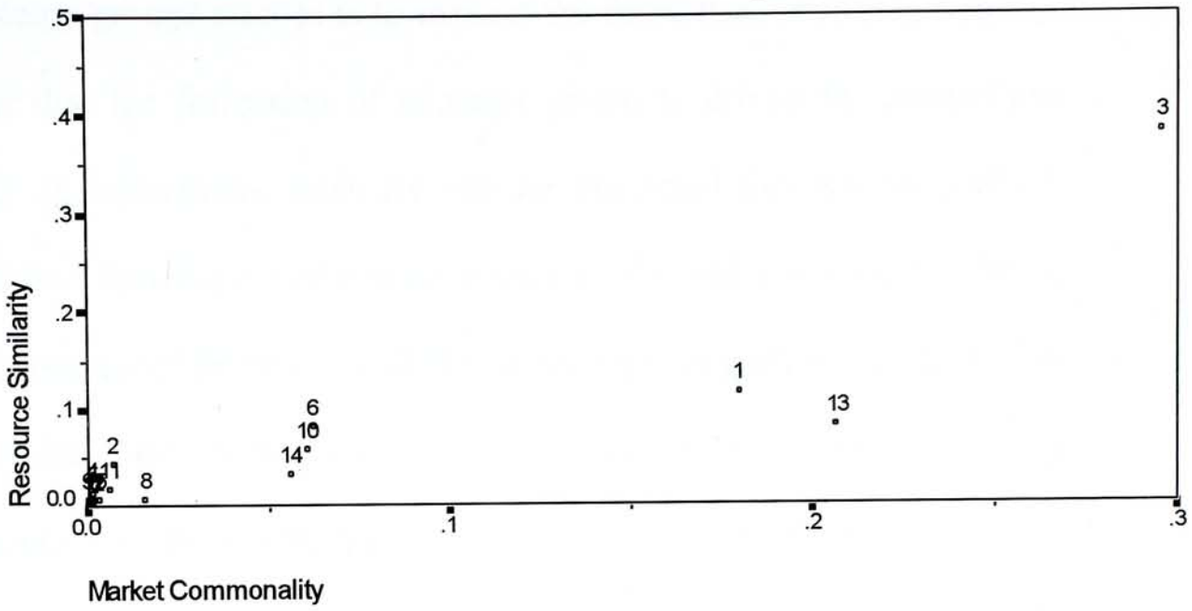
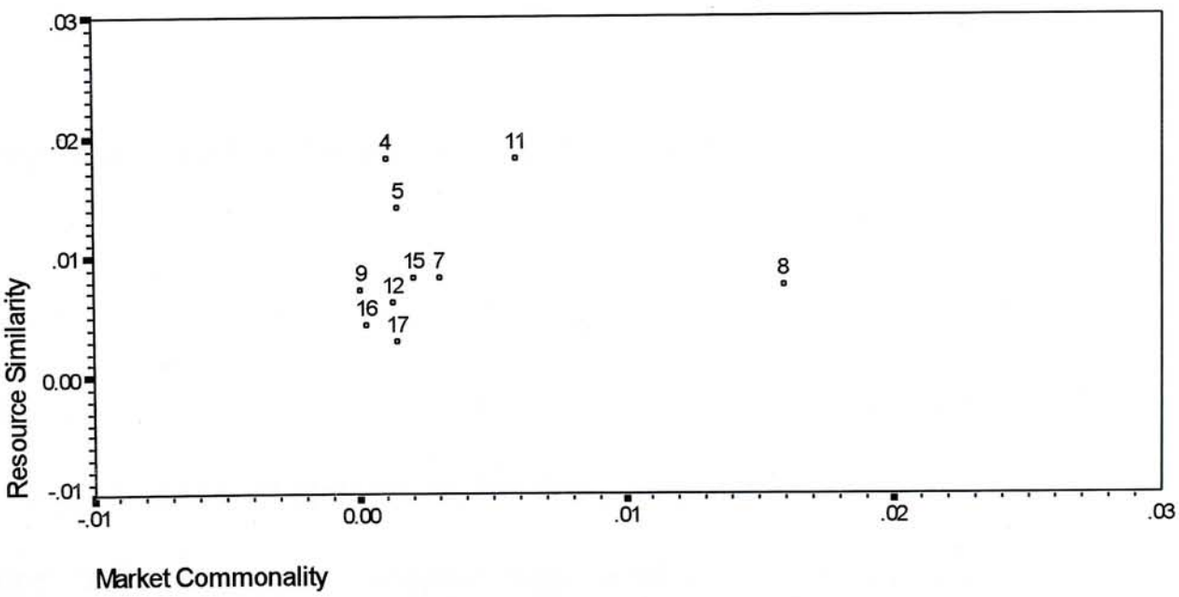


Figure 3d - Partly Enlarged

Suzuki to its counterparts



Suzuki to its counterparts

1=Nissan Motor
2=Isuzu
3=Toyota
4=Hino
5=Nissan Diesel
6=Mitsubishi
7=Toyota Auto Body
8=Nissan Shatai
9=Kanto
10=Mazda
11=Daihatsu
12=Aichi
13=Honda
14=Fuji
15=ShinMaywa
16=Komatsu Forklift
17=Kyokuto Kaihatsu Kogyo

As we mentioned in the literature review, the primary interest of prior strategic groups studies is to explain the formation of strategic group. We argue that the formation of strategic group is driven by competitive intensity. If competitive intensity can be predicted through an analysis along the two dimensions of market commonality and resource similarity, then the grouping of firms along different level of competitive intensity can easily be identified, suggests that if the intensity of rivalry in an industry can be predicted, then strategic group membership can be predicted. In this study, we measured competitive rivalry based on market commonality and resource similarity, proposed by Chen (1996). Our competitor mapping using market commonality and resource similarity measures suggested that:

Close competitors may not be the most intense rivals

This finding is consistent with Chen's proposition. Because of competitive asymmetry, the threat of a firm poses to its competitor is not the same as that of the competitor to the firm. In addition, due to mutual forbearance, a firm may not compete aggressively with its competitors when its market overlaps with the competitor's. This finding challenges the assumption underlying previous studies that strategic group members are direct competitors.

Identification of strategic group members should be from the perspective of a focal firm

Whether firms should be considered as strategic group members should be examined from the view of the focal firm. As demonstrated above, two competing firms view the level of competition from each other differently. Thus, if the focal firm changes, the competitive intensity among the other firms changes. In other word, each firm has its own group of firms that it will consider as strategic group members, depending whose perspective on competitive intensity is primarily considered.

Whether the focal firm should consider a firm as the strategic group member depends on the firm's relative strategic position to the focal firm

Whether the focal firm should consider a firm as the same strategic group member depends on the firm's relative strategic position to the focal firm. The relative strategic position of the firm over the focal firm depends on the likelihood for the firm to initiate the attack to the focal firm or respond to the attack initiated by the focal firm. For example, Figure 3a shows that if Nissan initiates an attack, other firms (those firms at the left hand corner in Figure 3a) will most likely be the target. On the other hand, if Nissan is being attack by Toyota, it is more likely for them to fall into

the same strategic group because the competitive intensity between them is heightened.

Figures 3a also suggests that one group of firms (Toyota Auto Body, Kanto, Aichi, ShinMaywa, Komatsu Forklift and Kyokuto Kaihatsu Kogyo) come closer together than others. This implies that the focal firm identifies strategic group members by examining the degree of market commonality and resource similarity of its competitors. The focal firm's ability to identify the level of market commonality and resource similarity among its competitors is critical to its strategy formulation and performance.

Market Commonality, Resource Similarity and Performance

The propositions proposed by Chen were examined by the statistical analysis. We hypothesized the linkage between market commonality, resource similarity and performance explicitly in previous chapter. Identification of the linkage between strategic group and performance is crucial to strategic group theory, as noted by Thomas and Venkatraman (1988). If performance mattered, then a firm should take extra attention to the competitor analysis using market commonality and resource similarity concepts. Our findings suggest that both market commonality and resource similarity are significant predictors for performance differences

between competing firms. These findings imply that strategic group should be defined in terms of firm-specific profiles such as market profiles and resource profile, rather than in terms of conventional industry-based strategic variables alone.

Moreover, based on the concepts of competitive asymmetry and mutual forbearance discussed above, it is suggested that when a pair of firms has both high market commonality and resource similarity, they may be close competitors but may not be the most intense rivals. This claims is partly confirmed by our statistical analysis. The results of the analyses suggest that when both market commonality and resource similarity are high, performance differences between competing firms become small. This implies that competitors with similar strategic profiles are less likely involved in direct competition which would cause the situation in which a winner attains higher performance than a loser. It should also be noted that there is a situation in which no market commonality and resource similarity exist at all. For example, both the market commonality and resource similarity measures of Nissan to Komatsu Forklift and Kyokuto Kaihatsu Kogyo are zero or close to zero (Table 8 and 9). It seems that there are nothing overlapping between a pair of these firms in market profiles and resource profiles. This situation may reflect the fact that there is no competitive relationship between these firms, suggesting that some firms are not competing with each other, even when they belong to the

same industry. If this is the case, then the assumption of I/O that firms in the same industry are *de facto* competitors does not hold.

Furthermore, the existing of an interaction effect of market commonality and resource similarity on performance provides insights for future research. Chen proposed the two constructs, yet, no empirical studies have been done to examine the moderating or mediating effect of these two constructs on performance. The results of the statistical analysis suggest that the impact of market commonality (resource similarity) on performance will be influenced by resource similarity (market commonality). This implies that the impact of market commonality (resource similarity) on the differences in financial performance measures is strengthened as resource similarity (market commonality) becomes large. On the other hand, the impact of market commonality (resource similarity) on the differences in stockholder-related performance measures (such as stockholders' return and market value) is weakened as resource similarity (market commonality) becomes larger. Together, these results imply that market commonality and resource similarity are highly correlated in predicting differences in financial performance, while they are complementary in predicting those differences in stockholder-related performance. In other words, market commonality and resource similarity play different roles in predicting firms' performance when different performance measures are used. In this study, we did not examine why

such different performance implication exists. Future study should investigate this issue in more detail.

To sum up, the implications for theory development as revealed in the present study are summarized as follows. First, the formation of strategic group is driven by competitive intensity. Second, competitive intensity can be predicted by firm specific constructs, such as market commonality and resource similarity in the present study Third, strategic group should be defined by more theory-driven constructs. Finally, the relationship between both market commonality and resource similarity, and performance is revealed, which facilitate future development of strategic group theory.

Besides, the findings of the present study also provide several managerial implications. First, strategic group membership is identified in a more sophisticated way with market commonality and resource similarity concepts. It is time for corporate decision makers to refresh their mind by insights from a new paradigm of competitor analysis. Second, market commonality and resource similarity are power tool for competitor analysis. We had demonstrated the utility of the two constructs and found them a quite useful in identifying competitors. The only caution is how to define market and resource because each firm has its own way of defining market and resource. Finally, the prediction of strategic group using

market commonality and resource similarity provides an objective evidence for managers to validate their mental mapping. These concepts are useful for each manager to share and understand others' perception on competition.

CHAPTER VII

CONCLUSION

The purpose of the present study is to advance the theoretical development in strategic group research. To this end, we empirically test the impact of the two firm-specific, theory-based constructs, market commonality and resource similarity proposed by Chen (1996), on performance differences between competitors. We successfully operationalized the two constructs, using a sample of 18 firms in Japanese automobile industry. Product categories and assets items in the balance sheet were used to operationalize the constructs of market commonality and resource similarity. We found that different groups of firms scattered along the two dimensions of market commonality and resource similarity. In examining Chen's proposition, we emphasized performance consequences throughout our study. Performance is a central issue in strategic management research in general, and strategic group research in particular. Consistent with our hypotheses, market commonality and resource similarity both had a negative impact on performance differences, and these two factors were moderated with each other on their impact on performance. However, our results showed that the impact of market commonality on performance differences was not as great as resource similarity.

Several implications are proposed for future research. Our findings are generally consistent with the notions of competitive asymmetry and mutual forbearance which suggest that close competitors are not necessary the most intense rivals. Traditional strategic group studies have categorized firms into groups based on their homogeneity in strategic attributes. However, the similarity in strategic attributes does not necessarily imply that all the group members are competitors. For example, firms which pursue similar business strategy in the same industry may not be direct competitors when the primary markets they compete are different or when they possess different resource profiles. Thus, grouping of firms based on strategic attributes may not always provide meaningful implications to strategy formulation. In addition, even the firms are close competitors, they are not necessary the most intense rivals when direct competitive actions harm the both firms' competitive position. Furthermore, the widely divergent ways of operationalization in strategic variables make the comparison of results difficult. The major weakness in prior strategic group studies is that the studies classified strategic groups using available market-based variables with no solid theoretical basis. Thus, more theory-based constructs are needed to be incorporated in the strategic group research. Such theory-based constructs provide new insights to developing the theory of strategic group.

We have empirically tested the impact of market commonality and resource similarity on performance differences and found that the two constructs were strong predictors of performance differences between competitors. This implies that instead of categorizing firms according to their strategic attributes, strategic group should be defined in terms of firm-specific profiles, such as market commonality and resource similarity. Moreover, our findings suggest that competitor analysis should be viewed from the perspective of a focal firm because competing firms may perceive the competitive position of their rivals in a different way. For example, some firms may view their rivals as attackers, and others may view the same firms as responders. Thus, the way a focal firm defines the relative strategic position of its competitors depends whether these firms are viewed as an attacker or a responder to the focal firm. In other words, strategic group membership should be defined based on the strategic position of the rivals relative to the focal firm.

We have to address limitations of the present study. First, in testing the propositions of the two constructs, the concepts of competitive asymmetry and mutual forbearance are implicitly assumed in our analysis. Because of expected retaliation, firms are less motivated to attack and most likely to respond to attack in situation where they compete with competitors in overlapping markets and possess resources similar to their competitors'. If this assumption does not be hold is relaxed, the results

and conclusion may provide only limited implications. Second, because one of our primary purposes is to examine the relationship between the two constructs and performance, we did not consider other constructs which might affect performance of the firms in the present study. Finally, the present study may be limited in scope in that it explains competitive pattern in a Japanese automobile industry, and the generalizability of the results to other contexts (e.g., non-Japanese industries, other manufacturing or non-manufacturing industries) is unknown.

In sum, the present study conducted both conceptual and empirical investigation on the relationship between the two constructs, market commonality and resource similarity, and performance. We hope the present study provides insights for future strategic group research. Future research should validate our findings in other industries and examine the relationship between the two constructs and other strategic factors such as strategic decision and firm size. Emphasis should be put on developing a more comprehensive model of strategic group formation and competitive dynamics within industry.

Appendix 1

APPENDIX 1

Contrasting the Five Streams of Thought of Strategic Groups (SGs)

	Industrial Organization	Dynamic Strategic Group	Cognitive Perspective	Resource-Based Approach	Technological Paradigm
Theoretical Antecedent	theory of competition in economics, Porter's competitive strategies and five forces model	I/O Economics, SGs, industry structure, evolution of industry	classification theories ((Johnson-Laird & Wason, 1977; Lakoff, 1987; Rosch, 1978) and personal construct theory (Kelly, 1955; Fransella & Bannister, 1977) in cognitive psychology	resource-based-view of the firm	evolution theory in natural science
Summary of Each Stream of Thought	the concept of SG originally emerged from I/O economics, exemplified by Porter's competitive strategies and five forces model, focused on the impact of various industry- and market-variables on formation of SGs	based upon the I/O economics, put forward the time dimension to the analysis of industry and focused on a dynamic interaction between SG and evolution of industry, that is, the changing competitive environment over time	based on cognitive psychology theories, formation of SGs in an industry reflects the cognitive structure of managers, decision makers' perceptions and cognition are phenomena that can be expected to influence the industry evolution	the bundles of resources, rather than product market combination are the basis of analyzing competition (Wenefelt, 1984; Barney, 1986; Dierickx & Cool, 1989), addresses performance explicitly in the model, no empirical works available yet	the technological paradigm represents the "average" offering of the industry at a certain point in time, enterprises occupy different "product-space" which are used to defined strategic groups, no empirical works available yet
Primary Focus of Study	mobility barriers in industries, strategic dimensions to group firms	competitive pattern in the evolution of an industry over time	cognition and perception of strategists	resources bundles of firms (firms' capacities and capabilities)	technological development, product characteristics
Level of Analysis	industries, SGs	industries, SGs	managers of individual firm	individual firm	industries
Relevant Organizational Theories for future theory development	transaction cost theory (bounded rationality); resource-based-view of the firm; institutional theory (institutional isomophism); population ecology (Thomas & Carrol, 1994: natural occurring of SGs consistent with the survival and dispersion of firms)	transaction cost theory (bounded rationality); resource-based-view of the firm; institutional theory (institutional isomophism); population ecology (Thomas & Carrol, 1994: natural occurring of SGs consistent with the survival and dispersion of firms)	transaction cost theory (bounded rationality and opportunism); resource-based-view of the firm	resource-based view of the firm	population ecology; resource-based-view of the firm

APPENDIX 1

Contrasting the Five Streams of Thought of Strategic Groups (SGs)

(conti.)

	Industrial Organization	Dynamic Strategic Group	Cognitive Perspective	Resource-Based Approach	Technological Paradigm
Major Works	Hunt (1972) Hatten (1974) Hatten, Schendel & Cooper (1978) Porter (1979) Harrigan (1980) Caves & Pugel (1980) Oster (1982) Ramsler (1982) Baird & Sudharsan (1983) Howell & Farizer (1983) Hayes, Spence and Marks (1983) Hergert (1983) Lahti (1983) Dess & David (1984) Hawes & Crittenden (1984) Ryans & Wittink (1985) Hatten & Hatten (1985)	Fiegenbaum et al. (1987) Cool & Schendel (1987) Cool & Schendel (1988) Mascarenhas (1989) Mascarenhas & Aaker (1989) Fiegenbaum & Thomas (1990) Bogner & McGee (1996)	Tang & Thomas (1992) Reger & Huff (1993)	Mehra (1994)	Wijnberg (1995)

Appendix 2

APPENDIX 2

Summary of Major Works From Each Perspective

Industrial Organization	Dynamic Strategic Group	Cognitive Perspective	Resource-Based Approach	Technological Paradigm
Hunt (1972), first coined the term strategic groups, observed 3 sources of asymmetry between firms in home appliance industry, his rationale is minimized economic asymmetry within each group. Based on the 3 asymmetries, 4 strategic groups are identified.	Fiegenbaum et al. (1987), argued strategic group research generally ignore the influence of time on competitive strategy and assume homogeneity in strategic behavior for the time period researched, stable strategic time periods (SSTP) model was proposed	Tang & Thomas (1992), spatial competition arguing firms may minimize their differentiation and thus form a strategic group and cognitive taxonomy mental categorization schemes create strategic groups of firms in the strategy formulation process	Mehra (1994), a resource-based model of strategic groups is developed, where competition is defined based on the resource bundles employed by industry participants rather than on the basis of their product market strategies	Wijnberg (1995), a group of firms that occupy positions near to each other may constitute a strategic group, product-space is number of product characteristics consumers/users recognize as relevant to them
Hatten (1974), Hatten & Schendel (1977), using manufacturing, marketing variables and structural variables to group firms in brewing industry	Cool & Schendel (1987), a study to examine theoretical foundations of strategic group concept, a general procedure for both identifying strategic groups industry and following such group over time	Reger & Huff (1993), strategic groups as a result of perception and cognition of strategists, three clusters were identified based on an empirical study of managers of 18 largest bank holding companies headquartered in the Chicago area		
Hatten, Schendel & Cooper (1978), manufacturing, marketing and financial variables to analyze groups in brewing industry	Cool & Schendel (1988), attempted to explain the incidence of performance differences among strategic group members is due to different asset accumulation, use longitudinal data from pharmaceutical industry in U.S. from 1963 to 1982	Reger and Palmer (1996), empirically examine differences between automatic and controlled processing by executives in a turbulence environment, results suggested that cognitive inertia affects judgments in both modes, but automatic mode is stronger		
Porter (1979), proposed the classification of strategic groups by using the relative size of a firm in its industry as a proxy for strategic group membership, according to scope of strategies, two groups of firms were identified -- leaders and followers.	Mascarenhas (1989), a longitudinal study explored strategic group dynamics, found that changes in group strategy were associated with substantial environmental shifts involving growth and decline rather than economic stability			

APPENDIX 2
Summary of Major Works From Each Perspective
(conti.)

Industrial Organization	Dynamic Strategic Group	Cognitive Perspective	Resource-Based Approach	Technological Paradigm
Harrigan (1980), using industry concentration, potential differentiation of products and height of exit barriers, identified groups along dimensions of firm's strategic postures in seven declining industries	Mascarenhas & Aaker (1989), proposed an analytical and empirical framework for examining strategy over the business cycle, group firms according to similarities in strategy			
Caves & Pugel (1980), also use firm size as an indicator of strategic group membership and found that small firms were more profitable in some of the U.S. manufacturing industries under studied	Fiegenbaum & Thomas (1990), studies the insurance industry for the years 1970-1984, the method of stable strategic time periods (SSTP) incorporating changes in both mean vectors and variance-covariance matrices is used to group firms			
Oster (1982), used product strategy to group firms, grouping according to the differences in advertising strategies (measured by advertising to sales ratio	Bogner & McGee (1996), explore the modes of entry, expansion paths, and competitive postures of European firms in the U.S. pharmaceutics industry, groups, using R & D variables and market position variables to group firms			
Ramsler (1982), selected product market differentiation, size, geographic scope as criteria to group 100 largest non-U.S. banks				
Baird & Sudharsan (1983), three-mode factor analysis to analyze firms in office equipment/electronic computing industry, based on financial accounting variables to group firms				

APPENDIX 2
Summary of Major Works From Each Perspective
(conti.)

Industrial Organization	Dynamic Strategic Group	Cognitive Perspective	Resource-Based Approach	Technological Paradigm
Howell & Farizer (1983), use the scope and differentiation on customer groups and needs to cluster firms in medical supply and equipment industry				
Hayes, Spence and Marks (1983), logit analysis is used, banks were classified into strategic groups based on strategic variables with specific regard to bank industry				
Hergert (1983), used a mix of marketing variables to group 2450 SBUs in 50 U.S. manufacturing industry				
Lahti (1983), studied Finnish knitwear industry, examined size as the major criterion for strategic group formation, firms are grouped based on the measure of resources availability and product-market scope.				
Dess & David (1980), examined intended strategy of firms, use a range of marketing variables gained from experts to group firm in the paints and allied products industry				
Hawes & Crittenden (1984), applied cluster analysis to group firms based on their retailing strategies, variables used included target market, product, promotion, price, buying and display				

APPENDIX 2
Summary of Major Works From Each Perspective
(conti.)

Industrial Organization	Dynamic Strategic Group	Cognitive Perspective	Resource-Based Approach	Technological Paradigm
Ryans & Wittink (1985) applied finance theory and capital pricing model as the bases for identification of strategic groups in the airline industry				
Hatten & Hatten (1985), studies the brewing industry, market strategy was the basis to classify firms, variables drawn from price, advertising, number of brands and national relative market share				

Appendix 3

APPENDIX 3

Paradigm Shift in Competitor Analysis

	Industrial Organization	Strategic Groups	Competitor Analysis and Interfirm Rivalry
Theory Bases	Economics	Economics, Porter's five-forces model	Multiple-point competition, resource-based view of the firm
Market	undifferentiate	single market (e.g. product-, customer-market)	multiple market
Market Structure	static and deterministic	structure-conduct-performance	shared-market, firms are mutually dependent
Competitors	firms in the same industry are de facto competitors (Barney, 1986; Porter, 1980)	firms homogeneous in strategic attributes are considered as competitors (strategic group members are de facto competitors)	firms homogeneous in strategic attributes may not be direct competitors because of differences in market focus and resources
Level of Analysis	industry	groups of firms	firm
Focus of Analysis	industry structure	strategic attributes of groups of firms	assessing competition tension between firms and the potential of rivalry behavior
Intensity of Rivalry		the degree of intragroup rivalry higher than intergroup rivalry (Porter, 1979)	intragroup rivalry less intense than intergroup rivalry
Prediction of Rivalry	lack predictive power	lack predictive power	degree of rivalry can be predicted through thorough analysis along market and resource dimension, market commonality has stronger prediction of competition in terms of attack and response than resource similarity

Appendix 4

APPENDIX 4
Total Sales and Total Assets of Sample Firms as at March 1996

Corporation	Total Sales	Total Assets
Nissan Motor	3,518,153	3,142,750
Isuzu Motors	1,222,229	930,660
Toyota Motor Corporation	7,957,152	6,543,864
Hino Motors	586,694	371,550
Nissan Diesel Motor	348,781	340,274
Mitsubishi Motors Corporation	2,522,559	1,637,038
Toyota Auto Body	530,678	188,583
Nissan Shatai	425,060	167,620
Kanto Auto Works	302,418	162,867
Mazda Motor Corporation	1,443,327	1,035,955
Daihatsu Motor	678,659	401,096
Aichi Machine Industry	247,430	123,381
Honda Motor	2,447,502	1,431,161
Suzuki Motor Corporation	1,120,944	690,962
Fuji Heavy Industries	746,787	637,136
ShinMaywa Industries	110,563	150,445
Komatsu Forklift	70,139	84,926
Kyokuto Kaihatsu Kogyo	52,569	69,514

* figures in million yen

Appendix 5

APPENDIX 5 - 1
Performance of Sample Firms
Latest 5 years and 5 year average

ROA

Corporation	Code	Mar-92	Mar-93	Mar-94	Mar-95	Mar-96	5YRAVG
Nissan Motor	7201	1.51	-0.41	0.22	-1.86	0.11	-0.09
Isuzu Motors	7202	-6.00	-1.51	0.45	1.63	4.82	-0.12
Toyota Motor Corporation	7203	5.47	3.25	2.51	2.04	2.83	3.22
Hino Motors	7205	2.02	0.92	0.71	1.16	1.98	1.36
Nissan Diesel Motor	7210	0.38	0.09	-2.00	0.54	1.11	0.02
Mitsubishi Motors Corporation	7211	1.68	1.19	0.95	1.14	1.24	1.24
Toyota Auto Body	7221	2.22	1.61	1.15	1.51	1.57	1.61
Nissan Shatai	7222	0.99	1.02	0.86	0.94	1.07	0.98
Kanto Auto Works	7223	1.94	0.67	0.42	0.51	1.01	0.91
Mazda Motor Corporation	7261	0.74	0.20	-3.42	-3.05	0.03	-1.10
Daihatsu Motor	7262	0.80	-0.81	1.30	0.58	1.00	0.57
Aichi Machine Industry	7263	1.08	0.81	0.80	0.98	1.44	1.02
Honda Motor	7267	2.21	2.06	0.98	1.47	1.84	1.71
Suzuki Motor Corporation	7269	1.50	1.31	1.13	1.22	1.37	1.31
Fuji Heavy Industries	7270	0.19	-0.83	-2.83	0.42	2.07	-0.20
ShinMaywa Industries	7224	2.44	1.35	1.02	0.11	0.96	1.18
Komatsu Forklift	7225	2.64	1.43	0.68	0.75	0.84	1.27
Kyokuto Kaihatsu Kogyo	7226	2.90	2.47	1.45	1.25	2.10	2.03

* figures in percentage

APPENDIX 5 - 2
Performance of Sample Firms
Latest 5 years and 5 year average

Growth - Stockholders' Return

Corporation	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	5YRAVG
Nissan Motor	2.12	8.49	4.07	1.44	26.13	8.45
Isuzu Motors	-3.71	8.74	28.35	26.14	53.32	22.57
Toyota Motor Corporation	2.88	9.03	15.28	18.49	34.54	16.04
Hino Motors	0.28	8.20	8.30	7.76	37.85	12.48
Nissan Diesel Motor	-3.46	0.71	12.70	9.95	20.35	8.05
Mitsubishi Motors Corporation	3.71	11.16	9.42	3.99	16.48	8.95
Toyota Auto Body	1.15	8.50	13.63	17.02	19.93	12.05
Nissan Shatai	0.85	12.45	12.79	6.38	15.39	9.57
Kanto Auto Works	-5.35	7.82	4.87	7.99	23.81	7.83
Mazda Motor Corporation	-6.56	-0.91	-3.93	-4.35	4.88	-2.17
Daihatsu Motor	1.72	15.83	12.53	14.76	48.16	18.60
Aichi Machine Industry	-1.05	12.48	10.70	4.20	28.36	10.94
Honda Motor	10.77	12.06	17.03	19.78	58.53	23.63
Suzuki Motor Corporation	14.15	21.32	13.63	3.50	43.09	19.14
Fuji Heavy Industries	-1.84	11.72	11.65	9.88	34.16	13.11
ShinMaywa Industries	-7.07	-0.99	4.02	0.05	21.69	3.54
Komatsu Forklift	-12.48	-1.12	2.33	2.22	24.80	3.15
Kyokuto Kaihatsu Kogyo			-4.70	-6.76	11.48	0.01

* figures in percentage

cell in blank means figure for that specific year is not available

APPENDIX 5 - 3
Performance of Sample Firms
Latest 5 years and 5 year average

Growth - Market Value

Corporation	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	5YRAVG
Nissan Motor	0.96	7.51	3.14	0.50	25.08	7.44
Isuzu Motors	-3.86	8.54	28.04	25.72	52.09	22.11
Toyota Motor Corporation	1.97	8.04	14.32	17.68	33.79	15.16
Hino Motors	-0.26	7.70	7.94	6.98	36.89	11.85
Nissan Diesel Motor	-3.52	0.37	12.50	9.65	19.69	7.74
Mitsubishi Motors Corporation	4.33	12.28	11.28	7.10	15.55	10.11
Toyota Auto Body	1.16	7.26	12.38	15.75	18.67	11.04
Nissan Shatai	-0.77	10.69	11.14	4.80	13.62	7.90
Kanto Auto Works	-6.70	6.29	3.46	6.56	22.21	6.36
Mazda Motor Corporation	-7.01	-1.19	-3.87	-4.26	4.88	-2.29
Daihatsu Motor	1.02	15.20	11.99	14.27	47.69	18.03
Aichi Machine Industry	-2.41	10.97	9.31	2.85	26.73	9.49
Honda Motor	9.84	11.13	16.12	18.87	57.45	22.68
Suzuki Motor Corporation	15.10	22.51	15.33	2.77	42.09	19.56
Fuji Heavy Industries	-2.04	11.43	11.27	9.32	32.78	12.55
ShinMaywa Industries	-7.68	-1.97	3.01	-0.95	20.41	2.56
Komatsu Forklift	-13.25	-2.10	1.30	1.18	23.53	2.13
Kyokuto Kaihatsu Kogyo			-5.09	-7.17	11.00	-0.42

* figures in percentage

cell in blank means figure for that specific year is not available

APPENDIX 5 - 4
Performance of Sample Firms
Latest 5 years and 5 year average

Growth - Stockholders' Equity

Corporation	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	5YRAVG
Nissan Motor	-1.47	-2.12	-2.16	-2.93	-0.91	-1.92
Isuzu Motors	0.75	7.33	12.25	16.47	25.85	12.53
Toyota Motor Corporation	3.44	2.51	2.21	2.24	2.70	2.62
Hino Motors	2.75	2.44	2.85	2.95	4.14	3.03
Nissan Diesel Motor	-0.21	-0.88	-1.01	4.99	6.74	1.93
Mitsubishi Motors Corporation	6.33	6.39	7.25	9.66	3.06	6.54
Toyota Auto Body	3.78	3.42	3.39	3.92	3.90	3.68
Nissan Shatai	0.43	0.37	0.27	0.40	0.58	0.41
Kanto Auto Works	1.40	0.74	0.82	1.29	2.24	1.30
Mazda Motor Corporation	-4.65	-5.85	-7.34	-4.93	0.11	-4.53
Daihatsu Motor	0.65	0.59	2.42	1.75	2.55	1.59
Aichi Machine Industry	1.36	1.31	1.46	1.82	2.46	1.68
Honda Motor	1.58	1.31	0.97	1.41	1.71	1.40
Suzuki Motor Corporation	5.43	5.69	6.69	2.32	2.62	4.55
Fuji Heavy Industries	-0.86	-1.23	-0.68	4.30	7.14	1.73
ShinMaywa Industries	1.18	0.09	-0.23	-0.51	0.27	0.16
Komatsu Forklift	1.32	0.37	-0.05	0.02	0.13	0.36
Kyokuto Kaihatsu Kogyo			2.13	2.47	2.11	2.24

* figures in percentage

cell in blank means figure for that specific year is not available

APPENDIX 5 - 5
Performance of Sample Firms
Latest 5 years and 5 year average

Growth - Total Assets

Corporation	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	5YRAVG
Nissan Motor	-1.98	-4.01	-4.26	-3.88	-0.89	-3.00
Isuzu Motors	3.97	2.83	2.43	1.31	-0.20	2.07
Toyota Motor Corporation	1.61	1.55	1.17	2.54	3.31	2.04
Hino Motors	0.33	0.69	-0.15	1.20	-2.68	-0.12
Nissan Diesel Motor	-1.43	-1.65	-2.35	4.56	-1.69	-0.51
Mitsubishi Motors Corporation	1.05	-0.46	-1.86	0.01	-1.95	-0.64
Toyota Auto Body	5.33	4.80	2.73	-2.02	-4.81	1.21
Nissan Shatai	-2.73	-3.43	-2.52	0.69	0.84	-1.43
Kanto Auto Works	6.12	6.18	-1.54	-2.62	0.20	1.67
Mazda Motor Corporation	-3.11	-5.19	-7.97	-9.21	-4.83	-6.06
Daihatsu Motor	-2.54	-2.79	-2.59	-1.56	0.43	-1.81
Aichi Machine Industry	0.11	-1.98	-3.41	-1.42	-4.48	-2.24
Honda Motor	-0.46	-0.86	-0.01	-2.16	-1.70	-1.04
Suzuki Motor Corporation	3.49	3.35	3.65	5.40	0.85	3.35
Fuji Heavy Industries	-1.09	-2.78	-5.50	-5.12	-5.09	-3.92
ShinMaywa Industries	4.84	1.11	2.63	4.60	10.29	4.69
Komatsu Forklift	-3.53	-4.90	-2.33	4.08	3.19	-0.70
Kyokuto Kaihatsu Kogyo			0.01	0.22	7.98	2.74

* figures in percentage

cell in blank means figure for that specific year is not available

APPENDIX 5 - 6
Performance of Sample Firms
Latest 5 years and 5 year average

Growth - Fixed Assets

Corporation	Mar-91	Mar-92	Mar-93	Mar-94	Mar-95	5YRAVG
Nissan Motor	3.08	0.78	0.25	0.41	-0.33	0.84
Isuzu Motors	3.77	1.57	0.23	0.62	-2.59	0.72
Toyota Motor Corporation	6.65	3.68	5.19	4.09	14.82	6.89
Hino Motors	7.16	3.43	1.09	-1.12	-3.37	1.44
Nissan Diesel Motor	-0.14	-3.42	-4.04	-4.26	-4.23	-3.22
Mitsubishi Motors Corporation	3.78	0.46	-0.23	-1.24	-2.88	-0.02
Toyota Auto Body	10.71	8.06	4.39	-2.55	-4.92	3.14
Nissan Shatai	-0.83	-3.00	-2.98	-2.24	-1.36	-2.08
Kanto Auto Works	11.51	8.93	-0.20	-0.50	1.62	4.27
Mazda Motor Corporation	-1.22	-4.53	-7.24	-9.46	-7.22	-5.93
Daihatsu Motor	1.11	-1.75	-3.59	-3.15	-3.53	-2.18
Aichi Machine Industry	-4.65	-8.29	-12.42	-13.15	-13.75	-10.45
Honda Motor	-1.20	-1.92	-2.82	-3.44	0.20	-1.84
Suzuki Motor Corporation	-0.52	-2.16	-3.00	-0.90	-1.15	-1.55
Fuji Heavy Industries	0.56	-0.33	-2.07	-1.47	-3.20	-1.30
ShinMaywa Industries	7.00	0.59	-1.94	-3.69	-6.69	-0.95
Komatsu Forklift	2.59	-0.52	0.05	1.72	4.33	1.63
Kyokuto Kaihatsu Kogyo			4.84	7.20	9.61	7.22

* figures in percentage

cell in blank means figure for that specific year is not available

Bibliography:

Aguinis, H. 1995. Statistical Power Problems with Moderated Multiple Regression in Management Research. ***Journal of Management***. 21(6):1141-1158.

Aiken, L. S., & West, S. G. 1991. ***Multiple regression: testing and interpreting interactions***. Newbury Park, CA: Sage.

Amit, R., & Schoemaker, P. J. H. 1993. Strategic assets and organizational rent. ***Strategic Management Journal***, 14:33-46.

Baird, I. S., & Sudharsan, D. 1983. ***Strategic groups: A three mode factor analysis of some measures of financial risk***. Working paper, 931, Bureau of Economics and Business Research. University of Illinois at Urbana-Champaign.

Baird, I. S., Sudharshan, D., & Thomas, H. 1988. Addressing Temporal Change in Strategic Groups Analysis : A Three-Mode Factor Analysis Approach. ***Journal of Management***, 14(3):425-439.

Barnett, W. P. 1993. Strategic deterrence among multiple point competitors. ***Industrial and Corporate Change***, 2:249-278.

Barney, J. B. 1986. Strategic factor markets: Expectations, luck, and business strategy. ***Management Science***, 32:1231-1241.

Barney, J. B., & Hoskisson, R. E. 1990. Strategic Groups: Untested Assertions and Research Proposals. ***Managerial & Decision Economics***, 11(3):187-198.

Baum, J. A. C., & Korn, H. J. 1996. Competitive Dynamics of Interfirm Rivalry. ***Academy of Management Journal***, 39(2):255-291.

Boardman, A. E., & Vining, A. R. 1996. Defining your business using product-customer matrices. ***Long Range Planning***, 29(1):38-48.

Boeker, W. 1991. Organizational Strategy: An Ecological Perspective. ***Academy of Management Journal***, 34(3):613-635.

Boeker, W., Goodstein, J., Stephen, J., & Murmann, P. 1994. The dynamics of market entry: The role of multipoint competition. ***Working paper, Graduate School of Business, Columbia University***.

Bogner, W. C., & Thomas, H. 1993. The role of competitive groups in strategy formulation: A dynamic integration of two competing model. ***Journal of Management Studies***, 30(1):51-67.

Bogner, W. C., Pandian, J. R., & Thomas, H. 1994. The Firm-Specific Aspects of Strategic Group Dynamics. In Daems, H., & Thomas, H. (Ed.). ***Strategic Groups, Strategic Moves and Performance***. Pergamon.

Bogner, W. C, Thomas, H., & McGee, J. 1996. A longitudinal study of the competitive positions and entry paths of European firms in the U.S. pharmaceutical market. ***Strategic Management Journal***, 17(2):85-107.

Cave, R. E., & Thomas, P. 1980. ***Intra-industry differences in conduct and performance: Viable strategies in U. S. Manufacturing Industries***. New York University Monograph. New York University.

Caves, R. E. 1994. Economics analysis and the quest for competitive advantage. ***Papers and Proceedings the 96th Annual Meeting of the AEA***. 74(2):127-132.

Caves, R. E., & Porter, M. E. 1972. From entry barriers to mobility barriers. ***Quarterly Journal of Economics***, 91:241-261.

Caves, R. E., & Porter, M. E. 1977. From entry barriers to mobility barriers : conjectural decisions and contrived deterrence to new competition. ***Quarterly Journal of Economics***, 91:214-262.

Chen, M. J. 1996. Competitor analysis and interfirm rivalry: Toward a theoretical integration. ***Academy of Management Review***, 21(1):100-134.

Chen, M. J., & Miller, D. 1994. Competitive attack, retaliation and performance: An expectancy-valence framework. ***Strategic Management Journal***, 15(2):85-102.

Cohen, J. 1988. ***Statistical Power Analysis for the Behavioral Sciences***. Lawrence Erlbaum.

Cohen, J., & Cohen, P. 1975. ***Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences***, Lawrence Erlbaum.

Cohen, J., & Cohen, P. 1983. ***Applied multiple regression/correlation analysis for the behavioral sciences***. 2nd Ed. Hillsdale. NJ: Erlbaum.

Collis, D. J. 1991. A resource-based analysis of global competition: The case of the bearings industry. ***Strategic Management Journal***, 17:121-154.

Conner, K. R. 1994. The resource-based challenge to the industry-structure perspective. ***Academy of Management Best Paper Proceedings***.

Cool, K., & Dierickx, I. 1993. Rivalry, strategic groups and firm profitability. ***Strategic Management Journal***. 14 (1):47-59.

Cool, K., & Dierickx, I. 1993. Rivalry, strategic groups and firm profitability. ***Strategic Management Journal***, 14 (1):47-59.

Cool, K., & Schendel, D. 1987. Strategic Group Formation and Performance: The Case of the U.S. Pharmaceutical Industry, 1963-1982. ***Management Science***, 33(9):1102-1124.

Cool, K., & Schendel, D. 1988. Performance Differences Among Strategic Group Members. ***Strategic Management Journal***, 9(3):207-223.

Cool, K., & Schendel, D. 1995. Performance differences among strategic group members. ***Strategic Management Journal,*** 9(3):207-223.

Cool, K., Dierickx, I., & Martens, R. 1994. Asset Stocks, Strategic Groups and Rivalry. In Daems, H., & Thomas, H. (Ed.). ***Strategic Groups, Strategic Moves and Performance***. Pergamon.

Cronbach, L. J. 1987. Statistical tests for moderator variables: Flaws in analyses recently proposed. ***Psychological Bulletin***, 102:414-417

Curran, J. G. M., & Goodfellow, J. H. 1990. Theoretical and practical issues in the determination of market boundaries. ***European Journal of Marketing***, 24(1):16-28.E26

Daems, H., & Vandingenen, R. 1994. Performance of European Industrial Groups. In Daems, H., & Thomas, H. (Ed.). ***Strategic Groups, Strategic Moves and Performance***, Pergamon.

Dess, G. G., & Davis, P. S. 1984. Porter's (1980) Generic Strategies as Determinants of Strategic Group Membership and Organizational. ***Academy of Management Journal***, 27(3):467-488.

Diericks, I., & Cool, K. 1994. Competitive Strategy, Asset Accumulation and Firm Performance. In Daems, H., & Thomas, H. (Ed.). ***Strategic Groups, Strategic Moves and Performance***, Pergamon.

Dixon, R. D., & Boal, K. B. 1996. Strategic groups: Membership, environmental stability, and performance. ***Academy of Management Proceedings 1996***, 16-20.

Evans, W. N., & Kessides, I. N. 1994. Living by the "golden rule": Multimarket contact in the U.S. airline industry. ***Quarterly Journal of Economics***, 109(2):341-366.

Feinberg, R. M. 1984. Mutual forbearance as an extension of oligopoly theory. ***Journal of Economics & Business***, 36(2):243-249.

Fiegenbaum, A., & Thomas, H. 1990. Strategic Groups and Performance: The U.S. Insurance Industry, 1970-84. ***Strategic Management Journal***, 11(3):197-215.

Fiegenbaum, A., & Thomas, H. 1993. Industry and strategic group dynamics : Competitive strategy in the insurance industry, 1970-84. ***Journal of Management Studies***, 30(1):69-105.

Fiegenbaum, A., & Thomas, H. 1994. The Concept of Strategic Groups as Reference Groups: An Adaptive Model and an Empirical Test. In Daems, H., & Thomas, H. (Ed.). ***Strategic Groups, Strategic Moves and Performance***. Pergamon.

Fiegenbaum, A., & Thomas, H. 1995. Strategic groups as reference groups: Theory, modeling and empirical examination of industry and competitive strategy. ***Strategic Management Journal***, 16(6):461-476.

Fiegenbaum, A., McGee, J., & Thomas, H. 1988. Exploring the Linkage Between Strategic Groups and Competitive Strategy. ***International Studies of Management & Organization***, 18(1):6-25.

Fiegenbaum, A., Sudharshan, D, & Thomas, H. 1990. Strategic Time Periods and Strategic Groups Research: Concepts and an Empirical Example. ***Journal of Management Studies***, 27(2):133-148.

Fiegenbaum, A., Sudharshan, D., & Thomas, H. 1987. The Concept of Stable Strategic Time Periods in Strategic Group Research. ***Managerial & Decision Economics***, 8(2):139-148.

Fombrun, C. J, & Zajac, E. J. 1987. Structural and Perceptual Influences on Intraindustry Stratification. ***Academy of Management Journal***, 30(1):33-50.

Frazier, G. L., & Howell, R. D. 1983. Business definition and performance. ***Journal of Marketing***, 47:59-67.

Freeman, J., & Hannan, M. T. 1984. ***Organizational Ecology,*** Cambridge, Mass.: Harvard University Press.

Fulmer, W., & Fulmer, R. 1990. Strategic Group Technique: Involving Managers in Strategic Planning. ***Long Range Planning***, 23(2):79-84.E45

Galbraith, C. S., Merrill, G. B., & Morgan, G. 1994. Bilateral strategic groups: The market for nontactical Navy information systems. ***Strategic Management Journal***, 15(8):613-626.

Ghemawat, P. 1994. The Short Run versus the Long Run in the Cross-sectional Industrial Organization. In Daems, H., & Thomas, H. (Ed.). ***Strategic Groups, Strategic Moves and Performance***. Pergamon.

Gimeno, J., & Woo, C. Y. 1996. Hypercompetition in a multimarket environment: The role of strategic similarity and multimarket contact in competitive de-escalation. ***Organization Science***, 7(3):322-341

Greening, T. 1980. Diversification, Strategic Groups and the Structure-Conduct-Performance Relationship: A Synthesis. ***Review of Economics & Statistics***, 62(3):475-477.

Hair, J. F., Anderson, R. E., Tatham, R. L. & Black, W. C. 1995. ***Multivariate Data Analysis with Readings***. 4th Edition. Prentice-Hall.

Hanssens, D. M., & Johansson, J. K. 1991. Rivalry as Synergy? The Japanese Automobile Companies' Export Expansion. ***Journal of International Business Studies***, 22(3):503-526.

Harrigan, K. R. 1980. ***Strategies for Declining Industries***. D. C. Heath, Mass.: Lexington.

Harrigan, K. R. 1985. An Application of Clustering for Strategic Group Analysis. ***Strategic Management Journal***, 6(1):55-73.

Hart, S. L. 1995. A natural-resource-based view of the firm. ***Academy of Management Review***, 20(4):986-1014.

Hatten, K. I., & Schendel, D. E. 1977. Heterogeneity within an industry; Firm conduct in the U.S. Brewing industry, 1952-1971. ***Journal of Industrial Economics***, 26:97-113.

Hatten, K. J. 1974. ***Strategic models in the brewing industry***, Unpublished doctoral dissertation. Purdue University.

Hatten, K. J., & Hatten, J. L. 1985. Some empirical insights for strategic marketers: The case of beer. In Thomas, H., & Gardner, D. M. (Ed.). ***Strategic Marketing and Management***. New York: Wiley.

Hatten, K. J., & Hatten, M. L. 1987. Strategic Groups, Asymmetrical Mobility Barriers and Contestability. ***Strategic Management Journal***, 8(4):329-342.

Hatten, K. J., & Schendel, D. E. 1977. Heterogeneity within an industry. ***Journal of Industrial Economics***, XXVI(2):97-113.

Hatten, K. J., Schendel, D. E., & Cooper, A. C. 1978. A strategic model of the U. S. brewing industry : 1952-1971. ***Academy of Management Journal***, 21(4):592-610.

Hawes, J. M., & Crittenden, W. F. 1984. A taxonomy of competitive retailing strategies. ***Strategic Management Journal***, 5(3):275-289.

Hayes, S. L. III, Spence, A. M., & Marks, D. V. P. 1983. ***Competition in the investment banking industry***, Cambridge, Mass: Harvard University Press.

Hergert, M. 1983. ***The incidence and implications of strategic grouping in U. S. manufacturing industries***. Unpublished doctoral dissertation. Harvard University.

Hergert, M. 1988. Causes and Consequences of Strategic Grouping in U.S. Manufacturing Industries. ***International Studies of Management & Organization***, 18(1):26-49.

Howell, A. S., & Frazier, G. L.. 1983. Business definition and performance. ***Journal of Marketing***, 3(2):119-131

Huff, A. S., Huff, J. O., & Thomas, H. 1994. The Dynamics of Strategic Change. In Daems, H., & Thomas, H. (Ed.). ***Strategic Groups, Strategic Moves and Performance***. Pergamon.

Hunt, M. S. 1972. ***Competition in the major home appliance industry 1960-1970***. Unpublished doctoral dissertation. Harvard University.

Jaccard, J., Turrisi, R., & Wan, C. K. 1990. ***Interaction effects in multiple regression***. Newbury Park, CA: Sage.

Jegers, M. 1994. On the Relation of the Occurrence of Strategic Groups in an Industry and its Profitability. In Daems, H., & Thomas, H. (Ed.). ***Strategic Groups, Strategic Moves and Performance***. Pergamon.

Karnani, A., & Wernerfelt, B. 1985. Research note and communication: Multiple point competition. ***Strategic Management Journal***, 6(1):87-96.

Ketchen, D. J. Jr., Thomas, J. B., & Snow, C. C. 1993. Organizational configurations and performance: A comparison of theoretical approaches. ***Academy of Management Journal***, 63 (6):1278-1313.

Kogut, B. 1984. Normative Observations on the International Value-Added Chain and Strategic Groups. ***Journal of International Business Studies***, 15(2):151-167.

Kumar, K. R. 1987. The Relationship Between Mixed Strategies and Strategic Groups. ***Managerial & Decision Economics***, 8(3):235-242.E61

Kumar, K. R., Thomas, H., & Fiegenbaum, A. 1990. Strategic Groupings as Competitive Benchmarks for Formulating Future Competitive Strategy: A Modeling. ***Managerial & Decision Economics***, 11(2):99-109.

Lahti, A. 1983. Strategy and Performance of a Firm : An Empirical Investigation in the Knitwear Industry in Finland 1969-81. ***Helsinki School of Economics***. Helsinki.

Lawless, M. W., & Tegarden, L. F. 1991. A Test of Performance Similarity Among Strategic Group Members in Conforming and Non-Conforming Industry Structures. ***Journal of Management Studies***, 28(6):645-664.

Lawless, M. W., Bergh, D. D., & Wilsted, W. D. 1989. Performance Variations Among Strategic Group Members : An Examination of Individual Firm Capability. ***Journal of Management***, 15(4):649-661.

Lewis, P., & Thomas, H. 1990. The Linkage Between Strategy, Strategic Groups, and Performance in the U. K. Retail Grocery Industries. ***Strategic Management Journal***, 11(5):385-397.

Lewis, P., & Thomas, H. 1994. The Linkage Between Strategy, Strategic Groups and Performance in Two Contrasting U. K. Industries. In Daems, H., & Thomas, H. (Ed.). ***Strategic Groups, Strategic Moves and Performance***. Pergamon.

Mahoney, J., & Pandian, J. 1992. The resource-based view within the conversation of strategic management. ***Strategic Management Journal***, 13:363-380.

Martin, S. 1988. Market Power and/or Efficiency? ***Review of Economics & Statistics***, 70(2):331-335.

Mascarenhas, B. 1989. Strategic Group Dynamics. ***Academy of Management Journal***, 32(2):333-352.

Mascarenhas, B., & Aaker, D. A. 1989a. Strategy Over the Business Cycle. ***Strategic Management Journal***, 10(3):199-210.

Mascarenhas, B., & Aaker, D. A. 1989b. Mobility Barriers and Strategic Groups. ***Strategic Management Journal***, 10(5):475-485.

McGee, J., & Thomas, H. 1986. Strategic Groups : Theory, Research and Taxonomy. ***Strategic Management Journal***, 7(2):141-160.

McGee, J., & Thomas, H. 1992. Strategic groups and intra-industry competition. ***International Review of Strategic Management***, 3:77-98.

McGee, J., Thomas, H., & Pruett, M. 1995. Strategic group and the analysis of market structure and industry dynamics. ***British Journal of Management***, 6(4):257-270.

McNamee, P., & McHugh, M. 1989. Mapping Competitive Groups in the Clothing Industry (Part 2). ***Long Range Planning***, 22(5):89-97.

Mehra, A. 1994. Strategic groups: A resource-based approach. ***Journal of Socio-Economics***, 23(4):425-439.

Mehra, A. 1996. Resource and market based determinants of performance in the U.S. banking industry. ***Strategic Management Journal***, 17(4):307-322.

Mendenhall, W., & Sincich, T. 1993. ***A Second Course in Business Statistics: Regression Analysis***. 4th Edition. New York: Macmillan.

Miller, D., & Chen, M. J. 1994. Sources and consequences of competitive inertia: A study of the U.S. airline industry. ***Administrative Science Quarterly***, 39(1):1-23.

Morgan, R. E., Foreman, S. K., & Poh, T. C. C. 1994. Assessing the status of marketing in architectural service firms. ***Management Decision***, 32(4):36-42.

Nayyar, P., McGee, J., & Thomas, H. 1989. Research Notes and Communications Strategic Groups: A Comment; A Further Comment. ***Strategic Management Journal***, 10(1):101-107.

Newman, H. H. 1973. ***Strategic Groups and the structure/performance relationship: a study with respect to the chemical process industries***. Unpublished doctoral dissertation. Harvard University.

Newman, H. H. 1978. Strategic Groups and the Structure-Performance Relationship. ***Review of Economics & Statistics***, 60(3):417-427.

Nohria, N., & Garcia-Pont, C. 1991. Global Strategic Linkages and Industry Structure. ***Strategic Management Journal***, 2:105-124.

Olusoga, S. A., Mokwa, M. P., & Noble, C. H. 1995. Strategic groups, mobility barriers, and competitive advantage: An empirical investigation. ***Journal of Business Research***, 33(2):153-164.

Oster, S. 1982. Intraindustry structure and the ease of strategic change. ***Review of Economics and Statistics***, 64:376-383.

Pegels, C. C., & Sekar, C. 1989. Determining Strategic Groups Using Multidimensional Scaling. ***Interfaces***, 19(3):47-57.

Penrose, E. T. 1959. ***The theory of the growth of the firm***. New York: Wiley.

Peteraf, M. A. 1993. Intra-industry structure and the response towards rivals. ***Managerial & Decision Economics***, 14(6):519-528.

Pitt, M., & Thomas, H. 1994. Industry Groups and Strategic Management: A Reappraisal of Strategic Group Concepts and Research. In Daems, H., & Thomas, H. (Ed.). ***Strategic Groups, Strategic Moves and Performance***. Pergamon.

Porac, J. F., Thomas, H., & Baden-Full, C. W. F. 1994. Competitive Groups as Cognitive Communities: The Case of Scottish Knitwear Manufacturers. In Daems, H., & Thomas, H. (Ed.). ***Strategic Groups, Strategic Moves and Performance***. Pergamon.

Porac, J., Thomas, H., & Emme, B. 1987. Knowing the competition: The mental models of strategists. In Johnson, G. (Ed.). ***Business Strategy and Retailing***. New York: Wiley.

Porter, M. E. 1978. Market structure, strategy formulation, and firm profitability: The theory of strategic groups and mobility barriers. In Cady, J. (Ed.). ***Marketing and the public interest***. Marketing Science.

Porter, M. E. 1979. The structure within industries and companies' performance. ***Review of Economics and Statistics***, 61:214-227.

Porter, M. E. 1980. ***Competitive strategy: Techniques for analyzing industries and competitors***. New York: Free Press.

Porter, M. E. 1981. The contribution of industrial organization to strategic management. ***Academy of Management Review***, 6:609-620.

Porter, M. E. 1982. ***Cases in Competitive Strategy***. New York: Free Press.

Primeaux, W. J. Jr. 1985. A method for determining strategic groups and life cycles stages of an industry. In Thomas, H., & Gardner, D. M. (Ed.). ***Strategic Marketing and Management***. Chichester: Wiley.

Quinn, J. J. 1995. Strategic Groups, Strategic Moves and Performance. ***Long Range Planning***, 28(4):112-113.

Ramlser, M. 1982. ***Strategic groups and foreign market entry in global banking competition***. Unpublished doctoral dissertation. Harvard University.

Reger, R. K., & Huff, A. S. 1993. Strategic groups: A cognitive perspective. ***Strategic Management Journal***, 14(2):103-123.

Reger, R. K., & Palmer, T. B. 1996. Managerial categorization of competitors: Using old maps to navigate new environments. ***Organization Science***, 7(1):22-39.

Rumelt, R. P. 1984. Toward a strategic theory of the firm. In Lamb, R. (Ed.), ***Competitive strategic management***. Prentice-Hall.

Ryans, A B., & Wittink, D. R. 1985. Security returns as a basis for estimating the competitive structure in an industry. In Thomas, H., & Gardner, D. M. (Ed.) ***Strategic Marketing and Management***. Chichester: John Wiley.

Scherer, F. M., & Roass, D. 1990. ***Industrial market structure and economic performance***. Boston: Houghton Mifflin.

Schroeder, D. M. 1990. A Dynamic Perspective on the Impact of Process Innovation Upon Competitive Strategies. ***Strategic Management Journal***, 11(1):25-41.

Schroeder, D. M., Congden, S. W., & Gopinath, C. 1995. Linking competitive strategy and manufacturing process technology. ***Journal of Management Studies***, 32(2):163-189.

Scott, J. T. 1982. Multimarket contact and economic performance. ***Review of Economics and Statistics***, 64(3):368-375.

Shepherd, G. W. 1972. The elements of market structure. ***Review of Economics and Statistics***, 54:417-423.

Smith, F. L., & Wilson, R.L. 1995. The predictive validity of the Karnani and Wernerfelt model of multipoint competition. ***Strategic Management Journal***, 16(2):143-160.

Smith, K. G., Guthrie, J. P., & Chen, M. J. 1989. Strategy, Size and Performance. ***Organization Studies***, 10(1):63-81.

Sudharshan, D., Thomas, H., & Fiegenbaum, A. 1991. Assessing Mobility Barriers in Dynamic Strategic Groups Analysis. ***Journal of Management Studies***, 28(5):429-438.

Tallman, S. B. 1991. Strategic Management Models and Resource-Based Strategies Among MNEs in a Host Market. ***Strategic Management Journal***, 12:69-82.

Tang, M. J., & Thomas, H. 1992. The Concept of Strategic Groups : Theoretical Construct or Analytical Convenience. ***Managerial & Decision Economics***, 13(4):323-329.

Tang, M. J., Thomas, H., & Fiegenbaum, A. 1994. Modeling Strategic Group Movements: A Markovian Approach and an Example. In Daems, H., & Thomas, H. (Ed.). ***Strategic Groups, Strategic Moves and Performance***. Pergamon.

Teece, D. J., Rumelt, R., Dosi, G., & Winter, S. 1994. Understanding corporate coherence: Theory and evidence. ***Journal of Economic Behavior and Organization***, 23:1-30.

Thomas, H., & Carroll, C. 1994. Theoretical and Empirical Links Between Strategic Groups, Cognitive Communities, and Networks of Interacting Firms. In Daems, H., & Thomas, H. (Ed.). ***Strategic Groups, Strategic Moves and Performance***. Pergamon.

Thomas, H., & Venkatraman, N. 1988. Research on Strategic Groups : Progress and Prognosis. ***Journal of Management Studies***, 25(6):537-555.

Tucci, J. E., & Sweo, R. 1996. Strategic groups: Firm structure, industry diversification, and performance determinants. ***American Business Review***, 14(1):73-79.

Vachani, S. 1990. Strategic Responses of Multinationals to Competition from Developing-Country Cottage Firms. ***International Marketing Review***, 7(3):31-47.

van Witteloostuijn, A., & van Wegberg, M. 1992. Multimarket competition: Theory and Evidence. ***Journal of Economic Behavior & Organization***, 18(2):273-282.

Weinstein, A. 1994. Market definition in technology-based industry : A comparative study of small versus non-small companies. ***Journal of Small Business Management***, 32(4):28-36.

Wernerfelt, B. 1984. A resource-based view of the firm. ***Strategic Management Journal***, 5(2):171-180.

Wernerfelt, B. 1995. The resource-based view of the firm: Ten years after. ***Strategic Management Journal***, 16(3):171-174.

Wiggins, R. R., & Ruefli, T. W. 1995. Necessary conditions for the predictive validity of strategic groups: Analysis without reliance on cluster. ***Academy of Management Journal***, 38(6):1635-1656.

Wijnberg, N. M. 1995. Technological paradigms and strategic groups : Putting competition into the definitions. ***Journal of Economic Issues***, 29(1):254-258.